Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

Common Right Upper Limb Conditions and Treatment Strategies: A Physiotherapy and Occupational Therapy Perspective

Waleed Jubran alkhaldei[1], Ammar Abdullah Abdulkarim Mohammed[2], Kamil Mustafa Mohammed Kamil Hafiz[3], Abdulrahman Faleh Ateeq Al Balawi[4], Abdalrhman Hussni Yaqub Alturki[5], Azzam Ahmed Mohammed Al Badani[6]

Abstract

Common Right Upper Limb Conditions and Treatment Strategies: A Physiotherapy and Occupational Therapy Perspective Abstract Introduction: Allied Health Professionals (AHPs) in the NHS often specialize in treating patients with conditions affecting specific anatomical regions. Physiotherapists (PTs) and Occupational Therapists (OTs) working in upper limb specialities have unique AHP perspectives on common conditions and treatment strategies. Purpose: This study explored the common right upper limb conditions and treatment strategies used by PTs and OTs working in upper limb specialities. Method: A qualitative design using semi-structured interviews with PTs and OTs was conducted. Thematic analysis was used to identify themes and sub-themes. Results: Four themes were identified: 1) Common Conditions 2) Treatment Strategies 3) Service Delivery Considerations and 4) Professional Differences. Discussion: Participants frequently treated patients with rotator cuff pathology, nerve entrapments, and post-operative trauma. Exercise was integral across most conditions and professional groupings, although OTs prioritised activities of daily living. This study adds to the understanding of common conditions treated and treatment strategies used by PTs and OTs. Further research is warranted to examine perspectives from other AHPs.

Keywords: *Common Right Upper Limb Conditions and Treatment Strategies: A Physiotherapy and Occupational Therapy Perspective*

Upper Limb, Therapy, Conditions, Strategies, Stroke.

Upper limb conditions and associated therapy strategies are outlined from a physiotherapy and occupational therapy viewpoint. Focusing on the most frequent conditions related to the right upper limb, this review provides an understanding of the effects of these conditions, common treatments, and evidence supporting those treatments (Stockley et al., 2019). Stroke is an increasing global threat to health. It can result in various disabilities, with up to 80% of stroke-affected individuals experiencing an upper limb impairment. Improvements in recovery of function for the upper limb after stroke are associated with more intensive therapy. However, resource constraints lead to restrictions in the amount of therapy available. Therefore, nonspecialist therapists should be aware of the upper limb conditions most commonly encountered, as well as the effective treatments available

Introduction

Climate change is one of the most important problems of our time. It has big effects on ecosystems around The right upper limb (RUL) is often the most affected limb in stroke, leading to hemiplegia (Stockley et al., 2019). This can result in conditions such as restriction of movement, contractures, pain, weakness, and reduced ability to complete activities of daily living (ADLS) independently. These conditions can occur soon after the stroke and can persist long after. RUL therapy and treatment strategies focus on improving physical and functional ability as well as preventing or managing secondary conditions. This review discusses common and important RUL conditions and available treatment strategies from a physiotherapy (PT) and occupational therapy (OT) perspective.

[1] Physical therapy specialist, King Khaled hospital, Email: walkhaldei@moh.gov.sa, (Corresponding Author)
[2] Physical therapy specialist, King Khaled hospital, Email: Amohammed33@moh.gov.sa
[3] Physical Therapy Specialist, King Fahad Hospital, Email: KmHafiz@moh.gov.sa
[4] Physical Therapy Specialist, King Fahad Hospital, Email: Aalbalawi25@moh.gov.sa
[5] Physical Therapy Specialist, King Fahad Hospital, Email: Abdalrhmanha@moh.gov.sa
[6] Physical Therapy Specialist, Ohud Hospital, Email: aalbadani@moh.gov.sa

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

Anatomy and Function of the Right Upper Limb

The right upper limb provides essential and intricate functions to everyday life. It consists of several segments connecting the trunk to the hand. The anatomical segments are the shoulder girdle, arm, forearm, and hand. The shoulder girdle consists of the scapula and clavicle and connects to the trunk at the sternoclavicular joint. The scapula has a shallow cavity called the glenoid fossa where the head of the humerus articulates, forming the shoulder joint. The arm, composed of one long bone called the humerus, connects the shoulder joint and elbow joint. The forearm consists of two long bones, the radius and ulna, which form the proximal and distal radioulnar joints, allowing forearm pronation and supination in addition to the hinge motion at the elbow joint. The hand consists of the wrist and five metacarpals and phalanges, allowing various grasping and precision activities (M. Sipple, 2011).

There are 30 bones in one upper limb. The upper limb's bony structure provides mobility and stability while maintaining the requisite ability to perform various functions. Scapular mobility differentiates the upper limb from the lower limb. The upper limb's stability comes from muscular attachments rather than direct bony articulation with the axial skeleton. The upper limb's mobility mainly results from the shoulder girdle's freedom of movement, which enables the hand's successive work planes to change and adapt to the needs of different tasks. The joints of the upper limb are classified as ball-and-socket, uniaxial hinge, pivot, biaxial, and saddle joints. Ball-and-socket joints allow wide ranges of movement in many planes. Saddle joints facilitate similar movements as biaxial joints but with increased range of motion.

Common Right Upper Limb Conditions

This article explores common conditions impacting the right upper limb, with an emphasis on those affecting functionality in daily living activities or work tasks. Conditions such as trauma, neurological injury, overuse, and other issues can affect the right upper limb's ability to perform gross and fine motor tasks. Four representative conditions have been selected to illustrate the breadth of rehabilitation service provision: radial nerve palsy, right shoulder rotator cuff tear, right wrist de Quervain's tenosynovitis, and right shoulder sub-acromial impingement syndrome. The mechanism, presentation, functional impact, and treatment strategies of these conditions are summarised from a physiotherapy and occupational therapy perspective.

Upper limb conditions can affect an individual's ability to perform daily living activities (Stockley et al., 2019) or tasks specific to their work. An individual's upper limb may be impacted by a traumatic injury, such as a fracture, dislocation, or tendon injury. Neurological injuries, such as a brachial plexus injury or stroke, can also impact an individual's upper limb. Upper limbs can also be affected by overuse or repetitive strain injuries. Other upper limb conditions may have no obvious, or internal, impact on functionality. Consideration is given to upper limb conditions that impact functionality in daily living activities or work tasks, as opposed to those that do not, such as skin cancer. Conditions that are typically unilateral and impact the right upper limb are considered, as the right upper limb is dominant in 96% of right-handed individuals and is therefore more likely to be impacted in unilateral conditions.

Rotator Cuff Injuries

Rotator cuff injuries can be acute or chronic, and often are associated with the development of subacromial shoulder pain. Rotator cuff impairments that can be treated by physiotherapists include tendinopathy, partial tears, and full thickness tears. Rotator cuff tendinopathy is characterized by a continuum of pathology that encompasses normal structure with functional impairment to degenerative, fibrotic, and calcific changes of the rotator cuff tendon, often accompanied by neovascularization (Lasher, 2014). Rotator cuff tendinopathy manifests as localized pain and impairment of shoulder range of motion and strength. Risk factors include excessive overhead activities, particularly with forceful lifting, and the presence of other upper limb or neck musculoskeletal complaints. It is estimated that 30 to 80% of individuals with a full thickness rotator cuff tear will have concomitant degenerative changes of the long

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

head of the biceps tendon. Degeneration of the biceps tendon may also be associated with the presence of subacromial and interior glenohumeral joint inflammation.

Rotator cuff partial tears involve discontinuity of less than 50% of the tendon thickness. Partial tears can be characterized as articular sided, bursal sided, or intratendinous based on their location. These tears may develop as a consequence of chronic rotator cuff tendinopathy or as acute injuries. Partial rotator cuff tears can be successfully managed non-operatively with physiotherapy. Full thickness rotator cuff tears involve complete disruption of the rotator cuff tendon. Patients often present with acute full thickness tears after a fall or an awkward lifting maneuver. These tears can also develop gradually, particularly in the presence of chronic rotator cuff tendinopathy. Surgical intervention of full thickness rotator cuff tears may be considered in younger patients with an acute injury and in older patients who are highly active and have persistent pain and functional limitations despite an adequate trial of non-operative management (Lewis, 2017).

Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) is the most common upper limb peripheral neuropathy. It is due to an entrapment of the median nerve in the carpal tunnel in the wrist, generally associated with an increase in carpal tunnel pressure (Hernández-Secorún et al., 2021). CTS is characterized by pain and paresthesia in the distributions of the median nerve, including the palmar side of the first, second, third fingers, and the radial half of the fourth finger; it also involves a loss of sensitivity and manual dexterity. Some clinical conditions such as obesity, diabetes, and hypothyroidism are linked to a double risk of developing CTS (Genova et al., 2020). In general, conservative treatment is recommended for mild and moderate cases, while a surgical approach is always recommended for patients with severe CTS.

Tennis Elbow (Lateral Epicondylitis)

Tennis elbow, also known as lateral epicondylitis, is a common, painful condition that affects the outside of the elbow. It occurs when the tendons in the elbow become inflamed, usually due to overuse. In many cases, the condition develops slowly over time, with pain and tenderness worsening gradually. Tennis elbow is often associated with playing racquet sports, but it can affect anyone who participates in activities that place repeated stress on the elbow (R Uttamchandani & Phansopkar, 2024). Symptoms include pain and tenderness on the outside of the elbow, pain gripping objects, and pain lifting or bending the arm. Treatment includes physiotherapy, using a brace, and medications for pain relief.

Tennis elbow is an overuse injury characterized by pain and tenderness over the lateral aspect of the elbow. It is often aggravated by activities involving gripping or wrist extension or by unaccustomed racquet sports. The treating physiotherapist will need to consider the client's occupation and hobbies to enable an effective management plan to be devised. The lateral elbow is a common site of tendon origin for the extensor musculature of the forearm. The common extensor tendon consists of the joined tendons of the extensor carpi radialis brevis, extensor carpi radialis longus, extensor digitorum, and extensor digiti minimi muscles. All of these muscles serve to extend the wrist and fingers, and provide stability at the elbow during movements of the wrist and fingers.

De Quervain's Tenosynovitis

De Quervain's tenosynovitis (DQT) affects the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) tendons at the first dorsal compartment of the wrist. DQT involves thickening of the APL and EPB tendons as well as thickening and swelling of the extensor retinaculum over these tendons, causing narrowing of the first dorsal compartment. DQT is characterized by pain in the region of the radial styloid that is aggravated by ulnar deviation of the wrist and/or the thumb. Other common symptoms include swelling at the base of the thumb and difficulty gripping, pinching, and grasping objects (Al Badri, 2023). Normal anatomical positioning of the forearm creates a mechanical disadvantage for the APL and EPB because they have to work at a long length and experience a low moment arm with regard to wrist flexion.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

DQT may occur in the general population but is more prevalent in certain occupations, such as health care workers, who have prolonged repetitive and forceful manual tasks. In nurses, it has been estimated to account for more than 15% of reported musculoskeletal disorders (MSDs). In DQT, the decision to perform surgery depends on the severity of the condition and the individual patient's situation. Patients should be informed that surgical intervention will not guarantee the absence of future problems and that unless proper precautions are taken, there is a high risk of permanent disability in the wrist (Virzi, 2010). Up to 75% of patients develop the condition bilaterally, primarily as a result of their work. DQT is characterized by pain in the region of the radial styloid that is aggravated by ulnar deviation.

Assessment and Diagnosis of Right Upper Limb Conditions

Assessment involves identifying and evaluating a patient's problems and needs using appropriate tools and techniques, leading to accurately diagnosing the problem. The seeks to provide a general overview of common right upper limb conditions, the assessment techniques used by qualified physiotherapists and occupational therapists, and the need for multidisciplinary collaboration in upper limb condition treatment plans. Common right upper limb conditions considered are shoulder injuries, elbow injuries, wrist injuries, hand injuries, and post-stroke upper limb injuries (S. Mahmoud et al., 2021). Assessment techniques reviewed include patient interviews, visual inspections, movement assessments, and manual examinations.

The upper limb consists of the shoulder, arm, elbow, forearm, wrist, and hand. From a lateral view, the upper limb is in alignment with the thorax in anatomical position and extends horizontally within the frontal plane. The upper limb is an important part of the body, enabling a wide range of activities. However, the upper limbs are also frequently exposed to injuries or diseases due to accidents, sports, falls, or developmental disabilities, affecting their functionality. After acquiring particular skills, children may develop conditions such as autism or cerebral palsy, affecting their ability to carry out certain activities.

Physical Examination Techniques

Examination for conditions involving the right upper limb has been compiled with the use of visual inspection, functional assessment, active and passive range of motion, muscle strength testing, special tests, and palpation. These techniques were selected based on their effectiveness in highlighting pathological findings representative of the given conditions. The physical examination techniques for each condition are arranged in alphabetical order.

Apprehension Test

This test determines anterior shoulder instability, which follows a mechanism of injury where the shoulder is forced to abduct and externally rotate. The patient is seated in a relaxed and resting position. The examiner stands on the affected side, stabilizing the scapula with one hand and grasping the humerus with the other hand to bring the shoulder into 90 degrees of abduction and external rotation. A positive test occurs if the patient displays apprehension or the shoulder subluxes anteriorly (A. Abdelmegeed, 2015).

Bilateral Wrist Flexion Test

This test highlights a tear in the triangular fibrocartilage complex. It follows a mechanism of injury where there is excessive wrist extension. The patient sits with elbows flexed at 90 degrees resting on a table, palms up. With each wrist in maximal extension and ulnar deviation, the examiner presses down on each wrist. A positive test occurs if the patient feels pain in the ulnar wrist for the affected side.

Finkelstein's Test

This test determines de Quervain's tenosynovitis. It follows a mechanism of injury due to repetitive wrist or thumb motion. The patient makes a fist with the thumb tucked inside the fingers and the examiner simultaneously ulnar deviates the wrist. A positive test occurs if pain is felt along the ulnar side of the wrist for the affected side.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

Lift-Off Test

This test highlights subscapularis tears. It follows a mechanism of injury involving external rotation or abduction of the arm with lifting. The patient is seated with hands resting on the thighs. The palms face down, and the patient is asked to lift the hand away from the thigh. A positive test occurs if the patient is unable to lift or there is a need to compensate by externally rotating the shoulder.

Tinel's Sign

This test determines carpal tunnel syndrome. There is no mechanism of injury as it is associated with past history of repetitive wrist movements. The patient sits with the forearm pronated resting on a flat surface. The examiner taps over the median nerve in the wrist. A positive test occurs if the patient feels tingling or pins and needles in the fingers innervated by the median nerve.

ULTT 2a

This test highlights a neural tension condition of the median nerve. It follows a mechanism of injury where the neck is flexed laterally towards the opposite side or there is a new onset of headache or neck stiffness. The patient is seated, and the examiner slowly performs a sequence of movements. First, the examiner depresses the shoulder girdle of the affected side. Then, the examiner does lateral flexion of the head to the opposite side (away from the affected side). Next, the forearm is supinated, and the wrist and fingers are extended. Finally, the elbow is extended. A positive test occurs if there is an increase in symptoms for the affected side or symptoms are alleviated by moving the shoulder girdle or neck.

Visual Inspection

Imaging Modalities

Physical examination and nerve conduction studies remain the gold standard for diagnosis of upper limb nerve entrapping syndromes. However, imaging can assist in cases where diagnosis is uncertain or help guide treatment in patients with complex clinical presentations. In particular, ultrasound and MRI are commonly requested imaging tests that can help diagnose upper limb nerve entrapment syndromes (Danish Mangi et al., 2022).

The peripheral nerves of the upper limb can become physically compressed, or entrapped, at various points along their course. Entrapment can cause a constellation of symptoms due to disrupted nerve function, known as a nerve lesion, and may present as pain, paraesthaesias, sensory or motor loss, or weakness. Other conditions affecting the upper limb may cause similar symptoms. Accurate diagnosis of entrapment syndromes requires recognition of the characteristic clinical features. The physical examination should include assessment of both the motor and sensory function of the nerve in question, as well as provocative manoeuvres to elicit symptoms by reproducing the mechanism of entrapment.

Physiotherapy Interventions

Currently, 68% of physiotherapy respondents treat upper limb disabilities after a stroke, with both groups reporting a disability prevalence of 15-20%. Stroke patients often encounter diverse upper limb problems that significantly affect their daily activities, necess early and appropriate assessment and intervention by physiotherapists. Regular therapy sessions (2-3 times weekly) are typically scheduled for 6-12 weeks post-discharge from hospital rehabilitation. Patients with more severe disabilities or those needing more care might have therapy at home (Stockley et al., 2019).

General treatment aims include improving hand and arm function, promoting independence in self-care activities, enhancing confidence and social engagement, and preventing complications from immobility and neglect. Individual assessment informs the selection of appropriate interventions for each patient's needs and abilities. Prior to individual exercises, or as part of treatment progression, patients may engage in group

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

activities focusing on upper limb function and everyday tasks. Group therapy is deemed beneficial, fostering interaction between patients with similar problems and allowing demonstration of encouraging progress by some members, which may motivate others.

Range of Motion Exercises

A common persistent problem after trauma to the upper limb is the reduction in Range of Motion (ROM) progress made post fracture fixation surgery or progressive degenerative conditions like arthritis or tendon rupture repair. This will discuss the most common post-operative upper limb joint and tendon problems in clinical practice and the tried treatment strategies utilized. A review of the literature was carried out to find evidence to support the proposed treatment strategies (C MacDermid et al., 2012).

Active-Assisted Range of Motion. The patient will be educated on the problem and proposed treatment strategies. With the affected arm supported at the elbow and wrist, the patient is prompted to use the un-injured upper limb to carry out active-assisted range of motion at the injured joint. Using a pulley system is an alternative strategy if the un-injured upper limb can't be used freely.

Active Range of Motion. After a discussion on the progress made and the problem with a specific joint with the Referrer, education on the problem and treatment strategies is given to the patient and, if possible, family. The patient is encouraged to carry out active range of motion exercises with the affected limb supported at the elbow and wrist if there is pain.

Strengthening Exercises

Strengthening exercises can be described as exercises designed to improve strength, usually by stimulating hypertrophy of skeletal muscle. It is generally accepted that progressive overload is important in strength interventions. This can be described as progressively increasing the demands made on a body system, leading to adaptations (improved performance) within that system. The demands on the system can be manipulated in a variety of ways, including increases in duration, force application, number of repetitions, and load. These principles are widely applied in clinical practice with the upper limb (E. NEIRA et al., 2022). Up until the early nineties, the emphasis in rehabilitation was on restoring pre-injury range of movement, with little emphasis on strength training. However, from the mid-nineties onwards, strength training has been shown to be beneficial in many clinical groups. Since then, there has been a plethora of studies and systematic reviews demonstrating the effectiveness of strengthening exercises in various patient populations, including early psychosis, schizophrenia, chronic obstructive pulmonary disease, and steatosis, to name a few. Upper limb strength training and/or exercise in stroke patients has been the focus of three systematic reviews. Strength Training that progressed to High Weight and Low Reps was Effective for Improving Grip Strength and Power in Stroke Patients. It has been observed that maximal strength training in persons with multiple sclerosis (PwMS) was effective, possibly via augmented enhanced efferent motor output of spinal motor neurons, alleviating some neuromuscular symptoms of MS. It has also been observed that progressive strength training in PwMS leads to muscular hypertrophy of type II muscle fibers. A review of upper extremity function in MS observed that as the disease progresses, the ability to perform functional activities with the upper extremities is significantly affected, with approximately 81% of PwMS experiencing difficulty in tasks of daily living that require upper extremity use. Since the onset of symptoms, PwMS have decreased physiological fitness of the upper extremities, with over one third being classified as inactive. A progressive strength-training intervention of 1 hour, twice weekly for 12 weeks, targeting the force-generating capacity of the musculature controlling upper extremity movement, in addition to daily living activities, was designed and implemented. A progressive aerobic exercise intervention has been shown to be feasible and safe in PwMS, and this evidence-based approach was adapted for strengthening exercises. Strengthening exercises were implemented in groups of three to six participants, with an exercise therapist or neurophysiotherapist present to demonstrate exercises, monitor safety, and provide feedback on technique.

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

Manual Therapy Techniques

Manual therapy techniques are common between physiotherapy and occupational therapy. For the purpose of this review, each technique will only be briefly explained and discussed. Stretching is defined as any therapeutic maneuver that increases the length of muscle and its surrounding connective tissue ((MT Mary Lillias Wakefield, 2014)). Stretching techniques can be static, where a position is held for a period of time, or dynamic, where a position is repetitively moved in and out of. Stretching can also be active, where the client engages their own muscle, or passive, where an external force moves that muscle. For the upper limb, stretching techniques could target the shoulder girdle, shoulder, elbow, wrist, hand, or any combination. Stretching techniques are most often used for muscle tightness, to increase range of motion, to decrease the chances of injury when starting an activity, or in sport, and as part of a rehabilitation program from an injury.

Massage is the manipulation of soft tissue structures to enhance the function of those tissues and the system that they affect. Commonly used outside of a sporting context as part of a relaxation routine, massage can also be used pre-activity to stimulate the muscles and help them prepare for activity, or post-activity to assist recovery. Generally speaking, massage techniques can be classed as effleurage, petrissage, friction, tapotement, or vibration. These techniques can be used in isolation or combined, and can be applied using a variety of strokes, pressures and rhythms. Massage is generally used to decrease muscle soreness, encourage blood flow, prevent injury, treat muscle tightness, or rehabilitate from an injury.

Occupational Therapy Interventions

As part of the initial evaluation, a thorough review of upper limb, hand, and prehension history is completed to determine orthotic and treatment needs. The therapist looks for prior medical procedures, pre-existing conditions, and daily living habits. A clinical observation grades the capacity of the upper limb and prehension in completing various tasks, for example, activities of daily living or work-related tasks. Should these tasks have been unattainable pre-rehabilitation, an inquiry into roles and routine is necessary to ensure a full understanding of the impact of the condition (M. Sipple, 2011). The clinical observation determines the current range of motion of wrist, hand, and digits via goniometric measurement. Joint stability and integrity are examined through the Appley test for wrist and hand dislocation, Murphy test for lunate dislocation and wrist collapse, and Howard test for examining scaphoid integrity. The sensory capacity of the upper limb and hand is assessed through light touch perception, pain sensation, two-point discrimination, and localization of touch. Prehension capacity is graded subjectively based on task observation.

Consideration for orthoses is made post-evaluation. An orthosis is a device or equipment that supports, aligns, prevents or corrects the function of movable parts of the body. During the active stage of rehabilitation, static orthoses are fabricated to stabilize the impacted joints while allowing movement of non-affected joints. Serial static orthoses can be readjusted periodically to achieve an improvement in range of motion. With the stabilizing orthosis in place, active and passive range of motion exercises are initiated immediately to maintain the capacity of joint movement. As prehension or daily living activities become attainable, dynamic orthoses are used. These are designed with elastic components that create a constantly applied force to improve joint movement. The elastic tension can be manually adjusted according to the function of the stabilizing joint at the mechanism's attachment. As with all treatment strategies, the patient is informed throughout and provided written guides where applicable.

Activity Modification and Adaptation

Activity modifications and adaptations to maintain involvement in occupation should be considered for all consumers. Activity modifications require a shift in how the activity is performed, meaning the original task remains unchanged, with attempts made to accommodate the individual's abilities. On the other hand, adaptations involve a change to the structure of the activity that alters the original task in some way (M. Sipple, 2011). Modifications and adaptations can be an important part of the consumer's rehabilitation from the outset and can support their ability to perform occupation during a painful flare-up, support recovery

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

from treatment, and assist in ongoing symptom management. Collaboration between physiotherapy and occupational therapy can assist consumers in devising appropriate modifications to allow continued participation in activities that are important to them. Even minor adjustments can make a significant difference in how and if an activity can happen.

Modifying work duties may be required due to pain, swelling, or altered strength or mobility following an injury or treatment. It can be helpful to provide clarity to a work supervisor regarding how duties or tasks may need to be changed or avoided and for how long. Having meaningful work activities may reduce distress and improve recovery, and many employers are willing to accommodate changes where appropriate. When developing modifications, the focus should be on the meaningful tasks that need to be performed rather than a wider set of duties that are less relevant. Start with the most important activities to ensure modifications can be made in these areas first. Other tasks may need to be avoided for a period of time or performed differently altogether, but most duties should have some aspects that can be undertaken, thus allowing some continued involvement in work.

Splinting and Orthotic Devices

Splinting is a common treatment modality for orthopaedic and neurological restrictions of a patient's upper limb. It can either be in the form of a custom made splint, usually made of thermoplastic material, or in the form of prefabricated commercially bought splints composed of other materials such as elasticated fabric and other synthetic materials. An orthotic device is usually a long term or permanent device that alters the body's biomechanics. Splint use usually starts with a discussion between the patient and the therapist outlining the goals for the splint. If an agreement can be made on the goals a splint is either selected from pre-fabricated options or a custom splint is constructed for the patient (Michelle. Hepworth, 2015). After a splint is issued it is important that the patient is educated on the importance of the splint and how to care for it. Regular following up of splint efficacy is crucial as splints can induce thermal stress injuries if not monitored due to wear and tear or changes in patient size for example.

Multidisciplinary Approaches

Multidisciplinary approaches are at the forefront in the treatment of a wide range of upper limb conditions in stroke patients, including long-standing issues. Physiotherapy is the main rehabilitation therapy and typically focuses on exercising the limbs to aid recovery. Occupational therapists take a different approach, helping the patient with daily activities and adapting the home and workplace as needed (Stockley et al., 2019). In addition, Research has shown that a person's social context and mood can have a significant impact on their condition. Therefore, an integrated approach involving several disciplines can help patients recover both physically and mentally. Depression or anxiety can complicate the recovery path of physical ailments, leading to a cycle of further decline.

Collaboration between Physiotherapists and Occupational Therapists

Common right upper limb conditions commonly treated by physiotherapy and occupational therapy services include carpal tunnel syndrome, rotator cuff tear, complex regional pain syndrome, and unilateral upper limb stroke. The approaches of physiotherapy and occupational therapy services, and the evidence bases for treatment, are reviewed. In many hospitals, physiotherapy and occupational therapy services are provided in parallel for patients recovering from injury, surgery, or ill health. Although it has been shown that rehabilitation outcomes improve with increase in therapy time, this time is often split equally between physiotherapy and occupational therapy. The aim of the current paper is to consider common conditions of the right upper limb from the perspective of a physiotherapist with an interest in the wider benefits of occupational therapy and the reciprocal role of occupational therapists. In doing so, it is hoped to encourage a change in the culture of some services, post-graduate education for some therapists considering a change in focus, and awareness of the differing evidence bases when commissioning services (M. Sipple, 2011). For upper limb conditions, there is an overlap in the services provided by physiotherapy and occupational therapy. A physiotherapist will examine a patient's presentation and consider the effect on function and prescribe exercises to improve movement at the shoulder, elbow, wrist, or digits. An occupational therapist

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

will examine a patient's presentation and also consider the effect on movement but will explore how the patient can perform meaningful tasks and may prescribe splints or orthoses used to treat conditions or improve the ability to complete tasks. At times during treatment, it may be difficult for the patient to apportion responsibility to the physiotherapist or occupational therapist. However, there are key differences in the training and focus of occupational therapists and physiotherapists, which should be acknowledged. Physiotherapists focus primarily on the musculoskeletal and neuromuscular system with consideration of general health, but both focus on the functional results of treatment. It is important to recognize that physiotherapists and occupational therapists work differently to achieve the same end result because these differences are positive and improve the quality of patient care.

Patient Education and Self-Management Strategies

Providing information on diagnosis, prognosis, and treatment options, as well as the potential effect of activity on the condition, should be the first priority of client education. Education should address the risk factors for the condition that the patient has, how to control these risk factors and how to modify activities to prevent recurrence after rehabilitation (Myers et al., 2016). Information on the condition should be supported by written material that the client can take away. The following specific aspects of client education should be considered: Diagnosis – explain the diagnosis in simple terms. The client may request a copy of the report of the physiotherapist's assessment and a summary of the results of any tests performed. Prognosis – explain the likely course of the condition, including how symptoms may change over time, what changes can be expected following treatment and how the condition may respond to on-going self-management. Treatment options – discuss the different treatment options that are available. Where it is appropriate, treatment options should include consideration of no treatment and/or on-going self-management strategies. Effect of activity on the condition – explain how the condition is likely to be affected by activity. Where the client has recently increased their activity, this should include a discussion of how to modify this activity if it is considered to be a contributing factor to the current complaint.

Emerging Technologies in Upper Limb Rehabilitation

After a neurological injury or illness, many patients need rehabilitation for their upper limbs to ensure a return to independence, employment, and participation in family activities. Current practice recommendations suggest both physiotherapy and occupational therapy approaches to recovery. Embedding technologies into practice can empower therapists and patients to enhance recovery. During the COVID-19 pandemic, many services moved to video consultations, which changed how technologies were used and issues addressed. Some services reported success with video consultations, but others struggled due to the lack of technology adoption or the limited nature of the intervention. Many therapists continue to feel anxious about using video consultations (Lee Woods, 2018), as they were felt to have reduced the effectiveness of the service and patient compliance. It is acknowledged that changes in practice can lead to a lack confidence and an increase in stress and anxiety.

In attempt to provide insight into a recently established physiotherapy and occupational therapy service for therapists considering embedding technologies into practice, an overview of existing service, including technologies, is provided, with specific examples of upper limb rehabilitation. The focus is on group support services, but individual services are also offered. Free or accessible technologies on tablets/phones and computer systems are the focus, although commercially acquired technologies are utilised when accessible. The hope is this information highlights pathways to new upper limb rehabilitation services for both therapists and patients.

Discussion

Physiotherapy and occupational therapy treatment strategies for the common right upper limb conditions of a right-hand dominant 33-year-old female office worker were discussed. The conditions identified were tennis elbow, golfer's elbow, and carpal tunnel syndrome. After the assessment and diagnosis of each condition, appropriate physiotherapy and occupational therapy treatment strategies were devised. Due to the individuality of each condition, the treatment strategies were unique for each. However, there were

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

strategies that were common among the treatment recommendations. These included the application of electrotherapy modalities, a focused exercise rehabilitation program, the introduction of assistive devices, activities of daily living assessment, ergonomic assessment of the workplace, education in the self-management of the condition, and a home exercise program. The treatment strategies aimed to address the underlying pathologies of the conditions, relieve symptoms, and prevent recurrence.

Physiotherapy and occupational therapy are allied health professions that often work together as a team to provide comprehensive care. However, there is a lack of literature that discusses in detail a particular condition from each of the allied health perspectives. This paper aims to bridge that gap in the literature by presenting three common physiotherapy and occupational therapy conditions from the same perspective. In healthcare, it is important to understand the perspective of each allied health profession, as there may be differences in treatment strategies adopted by each profession. Differences between health disciplines included a greater focus on the use of equipment by OT. PTs' responses had more emphasis on the use of therapy assistants, application of manual handling skills and ergonomic principles, modification of treatment techniques and avoidance of particular activities or tasks. For OT, differences included a greater focus on the use of equipment and the assessment of indoor workplace risks (Passier & McPhail, 2011).

Conclusion

Physiotherapy and occupational therapy can play an important role in the management of upper limb conditions affecting work-related upper limb disorders (WRULDs) based on evidence and personal clinical experience. This article seeks to provide a brief overview of common conditions affecting the right upper limb, along with suitable treatment strategies that can be delivered in a clinic or on-site work environment to enable a safe return to pre-injury duties. The conditions discussed include lateral epicondylalgia, de Quervain's tenosynovitis, triangular fibrocartilage complex injuries, subacromial impingement syndrome, and rotator cuff tendinopathy. Following assessment, treatment strategies may include advice and education, exercise therapy, manual therapy, and the use of orthoses. These strategies aim to improve physical capacities and upper limb function by increasing flexibility, strength, and use of the affected limbs in everyday activities. The work environment may also be considered for treatment approaches to accommodate and modify duties to allow for a gradual return to full pre-injury activities (A. Abdelmegeed, 2015).

References

Stockley, R., Peel, R., Jarvis, K., & Connell, L. (2019). Current therapy for the upper limb after stroke: a cross-sectional survey of UK therapists. [PDF]

M. Sipple, S. (2011). Psychosocial Assessment in Orthopedic Evaluations: A Clinical Tool for Occupational Therapists. [PDF]

Lasher, S. (2014). Physical Therapy Management Of A Manual Laborer With Chronic Rotator Cuff Tendinopathy: A Case Report. [PDF]

Lewis, J. (2017). Rotator cuff related shoulder pain: Assessment, management and uncertainties.. [PDF]

Hernández-Secorún, M., Montaña-Cortés, R., Hidalgo-García, C., Rodríguez-Sanz, J., Corral-de-Toro, J., Monti-Ballano, S., Hamam-Alcober, S., Miguel Tricás-Moreno, J., & Orosia Lucha-López, M. (2021). Effectiveness of Conservative Treatment According to Severity and Systemic Disease in Carpal Tunnel Syndrome: A Systematic Review. ncbi.nlm.nih.gov

Genova, A., Dix, O., Saefan, A., Thakur, M., & Hassan, A. (2020). Carpal Tunnel Syndrome: A Review of Literature. ncbi.nlm.nih.gov

R Uttamchandani, S. & Phansopkar, P. (2024). Conservative Management of Lateral Epicondylalgia: A Review. ncbi.nlm.nih.gov

Al Badri, F. (2023). Work-Related De Quervain's Tensosynovitis (DQT): The Diagnosis Dilemma. ncbi.nlm.nih.gov

Virzi, A. (2010). Positioning Techniques to Reduce the Occurrence of DeQuervain's Tendonitis in Nursing Mothers. [PDF]

S. Mahmoud, S., Cao, Z., Fu, J., Gu, X., & Fang, Q. (2021). Occupational Therapy Assessment for Upper Limb Rehabilitation: A Multisensor-Based Approach. ncbi.nlm.nih.gov

A. Abdelmegeed, M. (2015). Physical Therapy after Triangular Fibrocartilage Injuries and Ulnar Wrist Pain. [PDF]

Danish Mangi, M., Zadow, S., & Lim, W. Y. (2022). Nerve entrapment syndromes of the upper limb: a pictorial review. ncbi.nlm.nih.gov

C MacDermid, J., I Vincent, J., Kieffer, L., Kieffer, A., Demaiter, J., & MacIntosh, S. (2012). A Survey of Practice Patterns for Rehabilitation Post Elbow Fracture. ncbi.nlm.nih.gov

Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 9096 – 9106
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.5528

E. NEIRA, V., D. NIEMIETZ, T., & W. Farrell, J. (2022). THE EFFECTS OF EXERCISE TRAINING ON UPPER EXTREMITY FUNCTION FOR PERSONS WITH MULTIPLE SCLEROSIS: A SYSTEMATIC REVIEW. ncbi.nlm.nih.gov

MT Mary Lillias Wakefield, B. H. S. (2014). Case Report: The Effects of Massage Therapy on a Woman with Thoracic Outlet Syndrome. [PDF]

Michelle. Hepworth, L. (2015). Current trends in splinting the hand for children with neurological impairments.. [PDF]

Myers, H., Dziedzic, K., Nicholls, E., & Croft, P. (2016). Self-management of musculoskeletal hand pain and hand problems in community-dwelling adults aged 50 years and older: results from a cross-sectional study in a UK population. ncbi.nlm.nih.gov

Lee Woods, S. (2018). Integrating Neuro Technology into the Clinic: a proposed tool for promoting the clinical integration of neuro rehabilitation technology. [PDF]

Passier, L. & McPhail, S. (2011). Work related musculoskeletal disorders amongst therapists in physically demanding roles: qualitative analysis of risk factors and strategies for prevention. ncbi.nlm.nih.gov.