PHYSIOTHERAPY ROLE IN PSORIASIS AND PSORIATIC ARTHRITIS

Introduction

Psoriatic arthritis is a progressive inflammatory joint disease that is often associated with psoriasis, a skin condition. This chronic condition can affect both peripheral joints and the axial skeleton, leading to symptoms such as pain, stiffness, swelling, and potential joint damage. While the joint pathology progresses slowly, it is typically more of an inconvenience than a disabling condition. Psoriatic arthritis is classified as a seronegative spondyloarthropathy, indicating that certain factors present in rheumatoid arthritis are absent in the blood tests.

Psoriatic arthritis affects both men and women equally. In the majority of cases, individuals first experience skin symptoms of psoriasis before developing arthritis symptoms. However, in approximately 15% of cases, arthritis symptoms are noticed before psoriasis appears. Conversely, another 15% of cases involve a simultaneous diagnosis of psoriatic arthritis and psoriasis.

Physiotherapy plays a crucial role in enhancing the quality of life for individuals with psoriatic arthritis. The management of physiotherapy should primarily concentrate on education, improving range of motion, strengthening muscles, and enhancing overall cardiovascular fitness. In addition, physiotherapists may employ ultraviolet (UV) rays as a treatment modality to alleviate swelling and tenderness in affected joints.

Patients with psoriatic arthritis often experience stiffness in their joints and muscle weakness due to reduced usage. This lack of activity can lead to impairment. However, exercise serves as a significant intervention that patients can utilize to prevent or minimize such impairments from occurring. By incorporating exercise into their routine, individuals with psoriatic arthritis can effectively manage their symptoms and enhance their functional abilities.

DEFINITION

Psoriatic arthritis is an autoimmune disease with a chronic nature, characterized by both skin inflammation (psoriasis) and inflammation in the joints (inflammatory arthritis).

Incidence

Around 15-25% of individuals with psoriasis also experience associated joint inflammation known as psoriatic arthritis. Typically, the onset of psoriatic arthritis occurs during the fourth and fifth decades of life, affecting both males and females equally. In approximately 15% of patients, arthritis symptoms may appear before the development of psoriasis. However, in some cases, diagnosing psoriatic arthritis can be challenging, especially when arthritis symptoms precede psoriasis by several years.

Psoriatic arthritis is not limited to joint inflammation but is a systemic rheumatic disease that can trigger inflammation in various body tissues beyond the skin and joints. These areas may include the eyes, heart, lungs, and kidneys. Psoriatic arthritis shares common symptoms with other arthritic conditions such as ankylosing spondylitis, reactive arthritis, and arthritis associated with Crohn's disease and ulcerative colitis. Inflammation of the spine and other joints, as well as the involvement of the eyes, skin, mouth, and various organs, are characteristic features of these conditions.

Due to their similarities and tendency to cause spinal inflammation, these conditions are collectively referred to as spondyloarthropathy.

Spondyloarthropathy is a term used to describe a group of conditions that share two common characteristics. Firstly, there is the presence of arthritis that affects the spine or extremities, and often runs in families, indicating a genetic component. Secondly, inflammation occurs in the ligaments, tendons, and occasionally even in organs such as the eyes.

INCIDENCE

Psoriatic arthritis occurs in a range of 6% to 42% among individuals with psoriasis. The general population has an estimated psoriasis prevalence of approximately 2%. In the United States, psoriatic arthritis is estimated to affect 0.1% to 0.25% of the population. The prevalence of the condition is equal between males and females. While psoriatic arthritis can occur in any age group, it typically manifests between the ages of 30 and 40. If a first-degree relative has the disorder, there is an 80-90% chance of developing psoriatic arthritis.

CAUSES

GENETIC FACTOR:

- Genetic factors are believed to contribute to the development of psoriatic arthritis, although the specific genes or markers have not yet been identified.

- Having a first-degree relative with psoriatic arthritis increases the risk of developing the disease by 80-90%.

- Ongoing genome studies are being conducted to identify potential biomarkers associated with psoriatic arthritis.

ENVIRONMENTAL FACTOR:

- Trauma and injury can potentially trigger the onset of psoriatic arthritis.

IMMUNOLOGICAL FACTOR:

- The immune system is thought to play a significant role in the development of psoriatic arthritis.

- Elevated levels of cytokines, which are inflammatory messengers released during T-cell activation, have been found in the joints of individuals with psoriatic arthritis.

- Tumor necrosis factor, a specific cytokine, is abundant in the skin, blood, and joints of patients with psoriatic arthritis and psoriasis.

Tumor necrosis factor (TNF) is responsible for regulating inflammation in the body, and it is normally present in low levels. However, elevated levels of TNF can lead to inflammation throughout the body. Blocking this specific cytokine has been shown to result in significant improvement in psoriatic arthritis symptoms.

TYPES

Psoriatic arthritis can manifest in various types, depending on the distribution of joint involvement. There are five main types of psoriatic arthritis:

1. Symmetrical polyarthritis: This type affects joints on both sides of the body. Five or more joints are typically involved, showing a symmetrical pattern throughout the body.

2. Asymmetrical oligoarticular: This is the most common type, accounting for 70% of cases. It affects four or fewer joints in an asymmetrical pattern.

3. Spondylitis: Inflammation primarily occurs in the spine, particularly in the neck, lower back, and sacroiliac joints. It may coincide with symptoms in the extremities.

4. Distal interphalangeal joint involvement: Only the distal interphalangeal joints of the fingers or toes are affected. Nail changes are often observed in this type.

5. Arthritis mutilans: This type of psoriatic arthritis is characterized by severe joint damage that can progress rapidly. It is less common compared to other types.

Arthritis mutilans is the most severe and destructive form of psoriatic arthritis. It is characterized by the mutilation and deformation of the small joints in the fingers and toes. The affected joints may become swollen, leading to a sausage-like appearance of the fingers. It is important to note that arthritis mutilans is a rare subtype, occurring in less than 1% of all psoriatic arthritis cases.

In summary, psoriatic arthritis can present in different ways, including symmetrical polyarthritis, asymmetrical oligoarticular, spondylitis, distal interphalangeal joint involvement, or arthritis mutilans, with each type exhibiting distinct patterns of joint affection and potential consequences.

PATHOLOGY

The pathophysiology of plaque psoriasis has provided initial insights into the biological mechanisms underlying psoriatic arthritis. Advances in immunology and skin biology have shed light on the molecular pathways connecting skin and musculoskeletal disease. Research focused on plaque psoriasis has identified Th1 and Th17 cells as key drivers of the underlying pathobiology (Di Cesare et al., 2009; Lowes et al., 2008; 2014).

According to the current model, an infection or traumatic event triggers cell death in keratinocytes, leading to the release of cathelicidin LL37. LL37, when bound to keratinocyte DNA, activates toll-like receptors (TLRs) on the surface of plasmacytoid dendritic cells in the skin. Consequently, TLRs stimulate plasmacytoid dendritic cells to release various signaling proteins, including interferon α (IFNα) (Lowes et al., 2014). IFNα then activates dermal myeloid dendritic cells and facilitates their migration to the lymph nodes.

Within the lymph nodes, naïve T-cells have two distinct pathways. Firstly, secretion of IL12 can drive the differentiation of naïve T-cells into Th1 cells, which produce interferon γ (INFγ) and tumor necrosis factor (TNF)-α (Zaba et al., 2009). Notably, anti-TNF drugs were the first biologic agents utilized in the effective treatment of psoriasis. Secondly, dendritic cells secrete IL23, which prompts naïve T-cells to differentiate into Th17 cells (Di Meglio and Nestle, 2010). The blockade of IL23 is also increasingly being targeted in drug development for psoriasis (Kopp et al., 2015).

The pathophysiology of psoriasis provided initial clues about the biologic mechanisms underlying psoriatic arthritis. Recent advancements in immunology and skin biology have revealed molecular pathways connecting the two conditions. Studies on plaque psoriasis have highlighted the role of Th1 and Th17 cells as central drivers of the underlying pathobiology (Di Cesare et al., 2009; Lowes et al., 2008; 2014).

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Within the lymph nodes, naïve T-cells are guided down two pathways. The secretion of IL12 induces differentiation into Th1 cells, which produce interferon γ (INFγ) and tumor necrosis factor (TNF)-α. In contrast, IL23 secreted by dendritic cells prompts naïve T-cells to become Th17 cells (Di Meglio and Nestle, 2010). The IL23/IL17 axis has been implicated in the generation of psoriasis and psoriatic arthritis, with IL17 being a central therapeutic target (Thaci et al., 2015).

In psoriasis, Th1 and Th17 cells re-enter the circulation and return to the skin, where they secrete cytokines such as IL17, IL21, and IL22. Studies have shown that IL21 and IL22 promote the proliferation of keratinocytes, resulting in the characteristic silvery hyperkeratotic skin seen in psoriasis (Nestle et al., 2009). Elevated IL12 and IL23 levels have been observed in patients with spondyloarthropathy, including psoriatic arthritis, in their synovial fluid and peripheral blood (Wendling et al., 2009).

The IL23/Th17 axis is implicated in various clinical features of psoriatic arthritis. Animal models have demonstrated that IL23 administration leads to enthesitis, accompanied by increased levels of IL6, IL17, and IL22. Inhibition of IL23 with antibodies prevents the development of enthesitis, indicating its crucial role (Sherlock et al., 2012; Fitzgerald and Winchester, 2014). TNFα and IL17 in the IL23/Th17 pathway contribute to altered bone resorption and new bone formation observed in psoriatic arthritis. Agents blocking TNF or IL17 have shown efficacy in inhibiting bone damage (Ritchlin et al., 2003; Sato et al., 2006).

While the mechanisms responsible for new bone formation in psoriatic arthritis are not fully understood, IL22, bone morphogenetic protein, and Wnt signaling pathway agonists are considered potential drivers of this process. Further research is needed to elucidate the intricacies of these pathways and their involvement in psoriatic arthritis (Benham et al., 2014).

PATHOLOGICAL CHANGES

Epidermis: In psoriasis, there is an increased rate of cell reproduction in the stratum germinativum, leading to thickening of the stratum spinosum due to an increased number of cells and edema. The stratum granulosum is absent, while the strata lucidum and corneum are replaced by several layers of nucleated incompletely keratinized soft cells known as para-keratotic cells. The normal turnover and maturation process of skin layers are disrupted, resulting in sticky cells at the surface that do not shed off like normal keratinocytes. The accumulation of these cells forms scales, which dry out over 2-3 weeks and eventually slough off in large flakes.

Dermis: In psoriasis, the capillaries in the dermis are dilated, leading to increased blood flow. The papillae, which are small projections in the dermis that connect with the epidermis, become elongated. Additionally, there are signs of inflammation within the dermis.

CLINICAL SIGNS AND SYMPTOMS

1. SKIN LESIONS: Psoriasis is characterized by well-defined, dry, red papules and plaques that often overlap. These patches are typically non-itchy and commonly found on the extensor surfaces of the elbows, knees, back, and buttocks.
2. NAIL LESIONS: Nail involvement in psoriasis can manifest as pitting, ridging, discoloration (brown or yellow), cracking, and separation or loosening of the nails. These nail changes are often seen in patients who are more likely to develop arthritis.
3. ARTHRITIS: Arthritis may occur early and be a severe symptom in approximately half of all patients with psoriatic arthritis. Joints such as the wrists, ankles, knees, and elbows are commonly affected. Patients may experience morning stiffness, tenderness, inflammation, and redness in the affected joints.
4. SOFT TISSUE INVOLVEMENT: Psoriatic arthritis can also affect the soft tissues, leading to tenderness at the sites of tendon insertion or muscle attachment. This is often observed in conditions like Achilles tendinitis, plantar fasciitis, and flexor tendon inflammation in the hand.
5. DACTYLITIS: Dactylitis, or "sausage fingers," is a characteristic feature seen in about one-third of individuals with psoriatic arthritis. It is characterized by swelling of the entire finger, giving it a sausage-like appearance.
6. EXTRA-ARTICULAR FEATURES: Psoriatic arthritis can be associated with several extra-articular manifestations, including iritis (inflammation of the iris), urethritis (inflammation of the urethra), mouth ulcers, colitis (inflammation of the colon), and, less commonly, aortic valve disease.

CLINICAL PRESENTATION:

- Psoriatic arthritis is characterized by inflammation, pain, stiffness, and swelling in joints, as well as in ligaments and tendons at their insertion sites.

- Initially, the condition primarily affects the synovial tissue surrounding tendons and the joint capsule. As the disease progresses, tendons and bones can also be affected. In some cases, there may be significant joint destruction.

- The expression of psoriatic arthritis varies greatly from person to person, with a course that is unpredictable. The severity can range from mild to severe and can be destructive.

- Extra-articular manifestations of psoriatic arthritis can include inflammatory eye diseases such as uveitis and iritis, renal disease, mitral valve collapse, and aortic regurgitation.

- Inflammation of the urethra may also occur, and fatigue can be a significant issue for individuals with psoriatic arthritis.

Psoriatic arthritis is associated with several other diseases and conditions, including:

- Psoriasis

- Ankylosing spondylitis

- Systemic lupus erythematosus (SLE)

- Giant cell arteritis

- Sjögren's syndrome

- Crohn's disease

- Metabolic syndrome

- Atherosclerosis

- Coronary heart disease

- Depression

- Fatigue, anemia, and mood changes

- Increased risk of developing high blood pressure, high cholesterol, diabetes, and obesity

DIAGNOSTIC TESTS

When diagnosing psoriatic arthritis, various diagnostic tests and imaging techniques are utilized, including:

* HLA-B27 Detection: Blood work is conducted to detect the presence of HLA-B27, a common histocompatibility complex marker associated with psoriatic arthritis.
* Complete Blood Count (CBC): A CBC is performed to check for any abnormalities, such as a reduction in red blood cells, which can occur in psoriatic arthritis.
* X-rays: X-rays can reveal erosive changes in the distal interphalangeal (DIP) joints, supporting the diagnosis of psoriatic arthritis.
* Ultrasound and MRI: Both ultrasound and MRI have demonstrated high sensitivity in detecting early inflammatory joint changes in psoriatic arthritis.
* Contrast-Enhanced Ultrasound: Contrast-enhanced ultrasound is increasingly utilized as it can detect changes in bone and soft tissue earlier than traditional x-rays.

DIFFERENTIAL DIAGNOSIS

To differentiate psoriatic arthritis from other rheumatic conditions, additional blood tests can be performed:

* Rheumatoid Factor (RF) Test: This blood test helps rule out rheumatoid arthritis, as RF is commonly present in individuals with rheumatoid arthritis but not typically in psoriatic arthritis.
* Anti-Nuclear Antibody (ANA) Test: ANA test is used to rule out lupus (systemic lupus erythematosus) as it detects autoantibodies commonly found in lupus patients.

Regarding the pathogenesis of psoriatic arthritis, it is recognized that inflammation can originate at the enthesis (the site where tendons or ligaments attach to bone) and subsequently spread to adjacent structures, including bone, synovium, and other tissues. This is in contrast to rheumatoid arthritis, where inflammation is considered to start in the synovium (joint lining). The understanding of the distinct pathogenic mechanisms involved in psoriatic arthritis has contributed to the development of targeted therapies specific to this condition.

TREATMENT PLAN

The treatment goals for psoriatic arthritis can be categorized into four main areas:

1) General Management: This involves adopting lifestyle modifications and self-care practices to manage the symptoms and improve overall well-being. Strategies may include maintaining a healthy weight, engaging in regular exercise, managing stress levels, and avoiding triggers that worsen symptoms.

2) Topical Application: Topical treatments are applied directly to the affected skin and joints to alleviate localized symptoms. This may include the use of corticosteroid creams, moisturizers, salicylic acid preparations, or calcipotriene (a form of vitamin D).

3) Systemic Application: Systemic treatments are medications taken orally or through injection that target the underlying inflammatory processes and help manage the systemic symptoms of psoriatic arthritis. These may include nonsteroidal anti-inflammatory drugs (NSAIDs), disease-modifying antirheumatic drugs (DMARDs), such as methotrexate or sulfasalazine, or biologic agents, such as TNF inhibitors or IL-17 inhibitors.

4) Physiotherapy Management: Physical therapy and rehabilitation play an important role in managing psoriatic arthritis by improving joint mobility, reducing pain, and increasing strength and function. This may involve exercises, stretches, and techniques to improve joint range of motion, as well as modalities such as heat or cold therapy.

The specific treatment approach will depend on the severity of symptoms, the extent of joint involvement, and individual factors such as overall health and preferences. It is important for individuals with psoriatic arthritis to work closely with their healthcare team to develop a comprehensive treatment plan that addresses their unique needs and goals.

General management strategies for psoriatic arthritis include:

1. Sympathetic and Considerate Approach: It is important for healthcare providers to adopt a compassionate and understanding approach when dealing with patients with psoriatic arthritis. This helps in building trust and confidence, and reassures the patient that their condition is not contagious or disfiguring.
2. Addressing Anxiety and Worry: Psoriatic arthritis can have a significant impact on a person's emotional well-being. Identifying any anxiety or worry related to the condition and providing appropriate support and guidance is important. Encouraging relaxation techniques or suggesting professional help, if needed, can be beneficial.
3. Education and Reassurance: Providing information and education about psoriatic arthritis to the patient and their family can help alleviate concerns and misconceptions. Reassurance that the condition is manageable and not life-threatening is important for improving the patient's overall outlook.
4. Prompt Access to Specialists: Establishing an open-door system where patients have quick access to dermatologists or physiotherapists when needed can help in managing flare-ups and addressing any concerns promptly. This ensures timely intervention and appropriate management of symptoms.
5. Dietary Considerations: While there is no specific diet that has been proven to cure or treat psoriatic arthritis, some individuals may find that certain dietary changes, such as avoiding potential allergens or triggers, can help manage their symptoms. It is important to discuss dietary modifications with a healthcare professional or a registered dietitian to ensure a balanced and nutritious approach.

Topical applications for psoriatic arthritis can help manage localized symptoms and skin involvement. Here are some commonly used topical treatments:

1. Simple Bland Aqueous Cream: A basic moisturizing cream can help hydrate the skin and reduce dryness and itching associated with psoriatic lesions. It is a gentle option for daily use.
2. Coal Tar Applications: Coal tar preparations containing salicylic acid and zinc oxide can help reduce inflammation and scale buildup. These can be used alone or in combination with ultraviolet radiation (UVR) therapy as part of the Goeckerman regimen. This treatment is usually administered in a hospital setting and requires daily application and bathing.
3. Diathranol in Lassar's Paste: Diathranol is a potent topical treatment that can be effective for resistant psoriasis. However, it should be used with caution as it can cause burns on normal skin. Monitoring for adverse effects such as blisters or skin discoloration is important. UVR therapy with the Theraktin may be combined with diathranol treatment.
4. Corticosteroid Creams: Topical corticosteroids are commonly used for acute flare-ups and can provide initial relief. However, long-term use is generally discouraged due to potential side effects. They are particularly useful for sensitive areas like the face and hands due to increased absorption in these areas.

For mild disease, non-steroidal anti-inflammatory drugs (NSAIDs) and local corticosteroid injections may be used to alleviate pain and inflammation.

For moderate to severe psoriatic arthritis, disease-modifying anti-rheumatic drugs (DMARDs) are often prescribed to suppress disease activity and prevent joint damage. If patients do not respond adequately to NSAIDs or DMARDs, biologic medications targeting tumor necrosis factor (TNF) can be considered. These TNF inhibitors, such as adalimumab, etanercept, golimumab, and infliximab, are administered intravenously and help reduce inflammation by suppressing T-cells and TNF production.

Otezla is an oral phosphodiesterase-4 (PDE-4) inhibitor that has been approved for the treatment of psoriatic arthritis. By inhibiting PDE-4, Otezla reduces the production of pro-inflammatory mediators and increases the levels of anti-inflammatory mediators in the body.

In systemic applications for psoriasis, several medications can be used to manage severe cases. It's important to note that these medications should only be used under the supervision and prescription of a healthcare professional, as they can have significant side effects and require careful monitoring. Here are some examples:

- Retinoids: Retinoids, derived from vitamin A, can be effective in treating psoriasis. One specific retinoid called etretinate (marketed as Tigason) has shown improvement in psoriasis symptoms. However, it can cause side effects such as dryness and cracking of the mouth, hair loss (alopecia), and itching (pruritus). Importantly, etretinate is known to be teratogenic, meaning it can cause fetal malformations, and therefore should be avoided during pregnancy.

- Methotrexate: Methotrexate is a cytotoxic drug that can be used to treat severe psoriasis. It works by suppressing the immune system and reducing inflammation. However, it can have potential risks and side effects, including damage to bone marrow, intestines, and liver tissues. Regular monitoring of blood counts and liver function is necessary during treatment with methotrexate.

- Cyclosporine: Cyclosporine is an immunosuppressive medication that can be effective in treating severe psoriasis. It works by inhibiting the immune response and reducing inflammation. Cyclosporine is generally reserved for short-term use due to its potential side effects, including high blood pressure, kidney damage, and an increased risk of infections. Regular monitoring of blood pressure and kidney function is required during treatment.

PHYSIOTHERAPY MANAGEMENT FOR PSORIASIS AND PSORIATIC ARTHRITIS

1. Ultraviolet Radiation (UVR) Therapy: UVR therapy, including UVB and PUVA, can be effective in treating psoriasis. The Theraktin and PUVA are two sources of UVR used in the treatment:
* The Theraktin: This therapy involves using a tunnel with four fluorescent tubes emitting UVB radiation. The patient lies supine and prone during the treatment session to expose the entire body. UVB treatment may be used alone or in conjunction with coal tar or diathranol. Treatment frequency and duration are adjusted based on the patient's response and the progression of healing.
* PUVA: PUVA stands for psoralen plus UVA therapy. It involves the use of a photosensitizing substance called psoralen, which is taken orally, followed by exposure to UVA radiation. This treatment is used for resistant cases of psoriasis. Precautions must be taken, such as wearing protective goggles and avoiding sunlight for a specified period after treatment.

|  |  |
| --- | --- |
|  PATIENT’S WEIGHT (Kg) | DOSE(mg) |
|  30 |  10 |
|  30-50 |  20 |
|  51-65 |  30 |
|  66-80 |  40 |
|  81-90 |  50 |
|  90 and over |  60 |

Calculated according to skin type in joules ( Table X.2 ). There is little erythema with UVA; therefore the skin type chart has to be used. (To produce an erythema with UVA requires a dosage 1000 times greater than UVB).

Table X.2 UVA dosage in PUVA treatment

|  |  |  |
| --- | --- | --- |
| SKIN TYPE | START(J) | INNCREASE(J) |
| 1. Always burn, never tan
 | ½  | ½  |
| 1. Always, then slight tan
 | ½  | ½  |
| 1. Sometimes burn, always tan
 | 1 | 1 |
| 1. Never burn, always tan
 | 1 | 1 |
| 1. Lightly pigmented
 | 1 ½  | 1 ½  |
| 1. black
 | 1 ½  | 1 ½  |

The dosage is recorded in joules/cm2. An exposure meter is used to test the output and measures milliwatts/cm2; 1mW/cm2=1/1000 joules/second

1. Ultraviolet Radiation (UVR) Therapy: UVR therapy, such as UVB and PUVA, can be beneficial for treating psoriasis. UVB therapy is administered using a device called the Theraktin, which emits UVB radiation. The treatment is typically given in a tunnel-like setup with fluorescent tubes. PUVA therapy involves the use of a photosensitizing substance called psoralen, followed by exposure to UVA radiation. PUVA therapy is usually conducted in a cabinet with UVA-emitting fluorescent tubes. These therapies are typically administered in a controlled manner, with gradual increases in exposure time and dosage.
2. Duration and Frequency of Treatment: The duration and frequency of UVR therapy depend on various factors, including the patient's skin type and response to treatment. The initial treatment duration may range from 5 minutes for skin types I and II to 6 minutes for skin types V and VI. The duration can be gradually increased, usually by 1-3 minutes per session. The total joules count is monitored to ensure safety and to minimize the risk of complications. Initially, patients may attend therapy three times a week, and as healing progresses, the frequency is gradually reduced to twice weekly, once weekly, once per fortnight, or monthly "holding sessions."
3. Precautions and Advice for PUVA Therapy: During PUVA therapy, certain precautions should be followed:
* Psoralen should not be taken on an empty stomach.
* Protective goggles that screen 90% of UVA should be worn during exposure to prevent cataract formation.
* Sunglasses should be worn for at least 24 hours after taking psoralen, even indoors.
* Skin should be covered and a hat worn in bright sunlight for 24 hours after treatment.
* Ointments should be discontinued during PUVA therapy.
* Contraceptive measures are essential, as PUVA treatment can have adverse effects on pregnancy.
* Regular checkups are necessary after completing treatment.
* Patients should report any feelings of faintness during treatment to the physiotherapist immediately.
1. Mechanism of Action: PUVA therapy works by binding psoralen to DNA, which is then activated by UVA radiation. This binding leads to cross-linking of DNA thymine bases, inhibiting the epithelial synthesis and cell division. As a result, the excessive reproduction of the epidermis in psoriasis is reduced, leading to the improvement of symptoms.
2. Long-term Management: The duration of treatment for psoriasis varies, but it may take up to 10 weeks to clear the skin. Afterward, maintenance doses may be given for 4-6 weeks, depending on the individual's response. Regular 2-6 monthly reviews are necessary to monitor the condition. Once discharged, patients should have access to treatment as soon as a recurrence occurs.

**Physical activities for psoriasis:-**

These activities can help to manage theweight and may help control the psoriasis:

* Walking

 

* Ride a stationary bike
* swim to make the [heart](https://www.webmd.com/heart/picture-of-the-heart) stronger and to burn calories.

 

* If walking is painful because of cracking skin, try [swimming](https://www.webmd.com/parenting/fun-and-fit-family-11/slideshow-beach-safety) or water [aerobics](https://www.webmd.com/fitness-exercise/features/cardio-workouts-to-try).
* [Weight training](https://www.webmd.com/fitness-exercise/features/weight_training_basics) builds muscle and boosts the [metabolism](https://www.webmd.com/fitness-exercise/guide/how-to-boost-your-metabolism).



* Resistance exercises with the help of thera bands.
* Lift free weights, use weight machines.\



* Do pushups and squats.

 

### Influence of physical exercise on melatonin levels

 Exercise can acutely alter melatonin levels as well Although most studies show that plasma melatonin levels increase shortly and transiently after exercise. This variability in exercise-induced acute response on melatonin release could be dependent on the circadian phase at which exercise was undertaken. The acute increase in circulating melatonin that occurs after an exercise bout is attenuated by regular and vigorous training. strenuous exercise generates oxidative stress and melatonin is a potent antioxidant capable of protecting against potential molecular damage

 **Therapeutic exercises for psoriatic arthritis:-**

Therapeutic exercises are activities based on your exact needs. They are designed to reach a certain goal, eg to increase muscle strength. There are two types used for arthritis: range of motion and strengthening.

Range of motion exercises help to maintain joint movement, relieve stiffness and restore flexibility. To increase or maintain range and flexibility you need to take your joints and muscles to their limits. Range of movement exercises should be carried out daily.

Strengthening exercises help maintain or increase muscle strength. To strengthen a muscle you need to apply resistance to the movement. This can be done using your own body weight, weights or resistance bands. Strengthening exercises should be performed on alternate days and not when a joint is hot (feels warm when touched) and painful unless you are supervised by a physiotherapist.

The following exercises are just some examples to get you started. A health professional can design a programme for your specific needs.

**Fingers and hands**

1. Forearm supported on a table, hand relaxed over the edge.

Extend the wrist and clench your fist - relax and let your hand relax.

**Repeat ten times.**

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2. Clasp your hands together and support your forearms on a table with your hands over the edge. Bend your wrist up and down.

**Repeat five times.**



3. Forearm on a table, elbow tucked in to your side and palm turned down. Alternately, turn your palm to face up, then down, keeping elbow still.

**Repeat ten times.**



4. Elbow on table with hand up. Straighten your fingers out then bend them to touch your fingertips to the base of your fingers.

**Repeat ten times.**



5. Palm on table. Lift each finger individually off the table.

**Repeat five times.**



6. Elbow on table with hand up. Bring the tip of the thumb to the tip of the little finger, repeat to other fingers in sequence.

**Repeat five times.**



**Neck and back**

For the first three exercises sit up straight in a supportive chair, ie one with back support.

1. Tilt your head towards one shoulder until you feel the stretch on the opposite side. Hold for approximately five seconds.

**Repeat to the other side.**



2. Turn your head to one side until you feel the stretch. Hold for approximately five seconds. Repeat to the other side.

**Repeat five times to each side.**



3. Pull your chin in, keeping your neck and back straight (not tipping your head forwards). Hold at the end position and feel the stretch in your neck.

**Repeat five times.**



4. Lie on your back with your hands on your stomach, legs bent at the knee, feet flat on the bed or floor. Tighten your stomach muscles to flatten your lower back against the bed.

**Hold for five seconds, repeat ten times.**



5. Lie on your back as with the previous exercise. Keeping your shoulders down flat, slowly roll your knees from side to side.

**Hold for five seconds, repeat ten times.**



6. Lie on your back as before. Push down through your heels to lift your bottom and lower back off the bed.

**Hold for five seconds, repeat ten times.**



**Feet and toes**

1. Press your toes down and shorten your foot by pulling up the arch on the inside of the foot.

**Repeat on the other foot.**



2. Lie with your legs out straight and pull your feet up, then push your feet down.

**Repeat ten times.**



3. Wiggle your toes.

**Repeat ten times.**



4. Circle your feet around one way, then the other way.

**Repeat ten times.**



**Hips and knees**

1. Lie face down with both legs outstretched for five minutes. Then gently bend each knee to its limit, then relax with your legs straight.

**Repeat five times with a 30-second break.**



2. Sit with your legs outstretched on a firm bed. Press each knee down onto the bed to straighten it. Hold for five seconds. Relax.

**Repeat five times.**



3. Lie on your back with your knees bent up and feet flat on bed.

Bend each knee in turn up to meet your stomach, straighten and lower to the bed.

**Repeat five times.**

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**Jaw**

Gently open the mouth to its full width. Stretch a little and hold for five seconds. Then close your mouth completely.

**Repeat five times.**

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RECREATIONAL EXERCISE

Recreational exercise is an important component of maintaining overall health and well-being. It encompasses activities that refresh the body and mind, improving fitness, joint range of motion, and muscle strength. While recreational exercise should not replace a therapeutic program, it can complement it. Here are some examples of recreational exercises and their benefits for individuals with psoriasis or arthritis:

1. Swimming: Swimming is a great all-round exercise that is gentle on the joints. The chlorine in pool water does not generally affect psoriasis, but if your skin becomes dry and itchy, applying a barrier cream before swimming and showering afterward can help alleviate any discomfort.

2. Walking: Walking is another excellent exercise option. If arthritis affects your feet, it's important to wear well-fitting shoes, and you can use prescribed insoles for added support.

3. Cycling: Cycling can be a suitable alternative to walking, providing a more comfortable option for individuals with foot issues.

4. Yoga, Pilates, and complementary therapies: Activities like yoga, Pilates, and other complementary therapies can benefit people with arthritis. These practices may help improve joint flexibility and relieve stress. Contact your local council offices or community centers for information on classes or events.

The benefits of exercise for psoriasis and arthritis patients include:

1. Strengthening the immune system: Regular exercise promotes a healthy immune system, which is crucial for managing psoriasis, an autoimmune disorder.

2. Weight control: Psoriasis patients are more likely to be overweight, which can increase the risk of other health conditions. Regular exercise and a healthy diet can help control weight and reduce the risk of complications.

3. Improved effectiveness of treatments: Overweight patients may experience reduced effectiveness of psoriasis treatments. By maintaining a healthy weight through exercise, treatments can become more effective.

4. Alleviation of psoriatic arthritis symptoms: Regular exercise is crucial for managing psoriatic arthritis. It helps reduce pain, stiffness, and joint deformities, while also improving range of motion.

5. Stress relief: Psoriasis can cause significant stress for patients. Exercise stimulates the production of endorphins, which are natural mood elevators, and helps combat stress hormones. Regular exercise can provide mental benefits and help individuals cope with the challenges of living with psoriasis.

Despite concerns about exacerbating the condition or experiencing joint pain, it's important not to avoid exercise entirely. However, it's advisable to take precautions such as using ice packs to reduce inflammation, massaging swollen areas, using splints as prescribed by health professionals, and applying heat therapy when appropriate. Additionally, a TENS machine, which provides low voltage currents to painful areas, can be helpful in managing pain.

 **Summary**

* Regular low-impact routine exercise is best.
* Little and often is best, especially for weak muscles.
* Mix your exercises to avoid boredom.
* Ease out stiffness - do not force your joints.
* Accept the odd set-back.
* No excuses – regular, gentle activities will help you feel empowered and keep you mobile and fit!

STRETCHES

1. Neck Roll: Sit up straight in a chair with lower back support. Gently tilt your right ear toward your right shoulder, feeling a stretch on the left side of the neck. Hold for 2 seconds and slowly return to center. Repeat 5 times to the right and 5 times to the left.

2. Knee-to-Chest Stretch: Lie flat on your back with knees bent and feet flat on the ground. Slowly pull your right knee toward your chest, applying light pressure with your hands. Feel the stretch in the hip and back of the leg. Release slowly and switch legs. You can also do this stretch while standing in a swimming pool, using the opposite hand on the pool edge for balance.

3. Knee-Leg Extension: Sit in a chair with back and thigh support, feet flat on the ground. Slowly raise and extend your lower right leg, creating a straight line from hip to toe. Take 2 seconds to raise and lower the leg. Repeat 20 times and then repeat with the left leg.

4. Arch Stretch: With your right foot flat on the ground, press your toes down and try to lift your right arch. Take 2 seconds to raise and lower the arch. Repeat up to 20 times on each foot. This stretch can help with foot discomfort caused by psoriatic arthritis.

5. Ankle Rotation: While seated, point your foot and make small circles with your big toe. Do 5 circles clockwise and 5 circles counter-clockwise. Repeat with the other foot. Flex and point your toes gently to give them a small stretch.

6. Open-Closed Hand Stretch: Rest your elbow on a table, raise your lower arm to a 90-degree angle, and make a fist. Open all fingers to a count of two and then slowly close them back into a fist. Repeat 20 times with each hand to prevent hand stiffness.

7. Finger Lift: Place your forearm on a table with your palm down and fingers open. Slowly raise and lower each finger. Take 2 counts to raise and lower each finger. Repeat with the other hand.

8. Thumb-Finger Touch: Slowly try to touch each fingertip to the thumb tip in sequence, from index finger to pinky and back. Don't force them to touch if it's painful, but try to get them closer each time. This can help improve hand flexibility and strength.

Stretching exercises can improve flexibility without adding to joint pain. They increase blood flow to the muscles, providing localized muscle action instead of stressing the joints. The key is to find stretches that make it easier for you to perform your daily activities. It's important to remember not to be forceful during stretching, to avoid pain, and to hold stretches for 6 to 10 seconds