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Prevention & management of specific sports injuries through Ayurveda

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Abstract

Sports injuries are injuries occur to sportsperson participating in sporting events. In many cases, these types of injuries are due to overuse of a part of the body. When injuries occur due to sudden impact, the body reacts to that condition, which may leads to hamper motor & sensory activity of actively active body parts. During the course of sports activity sportsperson experiences shoulder pain, knee pain and back pain. In Ayurvedic classics, it is pointed out that *Vata dosha* is responsible for most of the bodily activity & the same is vitiated during the deranged activity or over use of particular joint, which is responsible for variety of pain specially confined to muscle, joint and ligaments. Sport injuries are a kind of traumatic diathesis in which *Vata dosha* is provoked that may leads to pain at the site of affliction. Such types of injuries require special care to save the afflicted body parts. Current treatment modalities in modern medicine are oral steroidal and non-steroidal anti-inflammatory drugs (NSAIDs), which have a high incidence of intolerable gastrointestinal side effects and other systemic side effects. So, there prolong use is not justifiable in sportsperson. In this concern ancient Indian healing system, Ayurveda addresses various therapeutic techniques & medicaments that can help a lot to the sports person. In practice, there are different treatment modalities for injuries such as uses of drugs, dietetics as well as practices of rehabilitation through *Abhyanga* (medicated oily massage), and *Swedana* (medicated fomentation). *Sthanika vasti* therapy (localized medicated *vasti*) aids to pacify the vitiated *Vata* there by relieving the pain & stiffness. Besides, Ayurveda also advocates herbal paste (*lepa*) for external application in the affected areas aid temporarily relief along with diverse heat modalities along with special poultice made up of rice gruel with oil make the joint more stable & viable.

Keywords: Ayurveda, Ayurvedic therapy, Sport, Sport injury, Yoga

Introduction

Sports injuries are injuries that occur to athletes participating in sporting events. In many cases, these types of injuries are due to overuse of a part of the body when participating in a certain activity. When injuries occur due to sudden impact, the body reacts to that condition, which leads to immobility, pain and other inflammatory responses. More common and less traumatic causes include lifting, reaching, and pulling movements that strain the muscles and tendons or sprain ligaments surrounding the joint. Injury may or may not be realized during activity^[1]. Discomfort may develop days later. Repetitive movements like swimming, tennis, weightlifting, baseball, basketball and football could lead to joints pain and ligaments injury. Daily tasks like housework, raking leaves or manual labor can lead to shoulder joint pain, knee pain and back pain over time^[2]. In Ayurvedic classics, it is pointed out that *Vata dosha* get vitiated during over activity during sports activity, which is responsible for most of the bodily pain. Sport injuries are a kind of traumatic diathesis in which *Vata dosha* is provoked that may leads to pain at the site of affliction. Sports injuries require special care so that the damage to the body-part does not become permanent. Ayurveda treatment methods impart greater benefits to the sportsperson from actively pursuing the sport. Following injuries are common in sportsperson during the sport activity. In ancient literature like Vedas and in classics of Ayurveda the concept of *Marma* was limited to the war science and *Marma* points were mainly considered as only fatal points i.e., trauma to them leads to debility or even death as these are seat of *Prana* (life energy). As *Prana* effects all aspects of a person that is – physical, mental, social as well as spiritual, so *Marma* may be assumed to be those important seats of

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psycho-neuro-endocrino- immunological pathways which may be influenced in order to regulate the physical, mental and spiritual functions. In the present era its applied aspect, that is, stimulation of these *Marma* by means of *Abhyanga* (massage), *Mardana* (Acupressure), Aroma therapy, *Pranic* healing, Herbs (*lepa*), *Raktamokshana* (bloodletting) and *Agnikarma* (heat application), etc is utilized to treat disease but *Marma chikitsa*, a therapy practiced by few practitioners to stimulate these *Marma* points directly by applying pressure, vibrating tendons, pinching or application of hot and cold pastes, oils and ointment on *Marma* depending on the type of *Marma* had emerged as new dimension in non-pharmacological treatment of Ayurveda [3].

Shoulder injury

More common and less traumatic causes include lifting, reaching and pulling movements that strain the muscles and tendons or sprain ligaments surrounding the shoulder joint. Injury may or may not be realized during activity. Repetitive movements of shoulder joints in variety of games such as swimming, tennis, baseball and football may lead to develop shoulder injury in sportsperson. These overuse type injuries are not only minimizing the daily activity but also limits their sport activities. Daily tasks like housework, raking leaves or manual labor can lead to shoulder pain in due course of time. Long term shoulder problems are more likely when pain develops gradually or discomfort is recurrent over a period of time. Chronic pain is often triggered by prior injuries, especially if original injury was severe or was not allowed to heal completely. The events preceding pain or discomfort will provide clues behind original cause even if the exact incident is not evident. Most cases of shoulder pain are not serious and respond to simple treatments. Shoulder injury can cause weakness, tenderness and loss of full joint mobility. When pain develops suddenly or related to direct trauma, stop all strenuous activities to prevent aggravation of injury, increasing the damage and delayed healing. Most shoulder pain is related to muscle or tendon strain. Muscle spasms may develop as strained muscles swell after injury. Rest and gentle stretching will help the muscles relax. Most injuries will not require X-Ray or other imaging studies (Keller 2007) [4]. It is suggested that if occur stop activity immediately. Apply ICE Wrap sealed ice bag in towel and apply to injury as soon as possible. Keep on injury for 20 minutes and repeat every 2-3 hours for the first 48 to 72 hours. Under most circumstances, this will help to reduce swelling and pain. Early care can accelerate the healing. In most cases shoulder pain progressively improves over a course of 2-3 days, but pain and soreness can persist for weeks depending on injury and the choice of daily activity. During recovery, exercise with caution to prevent re-injury. Appropriate, slow, gradual rehabilitation can reduce healing time and help to prevent re-injury (schiffert health center 2010) [5].

Low back pain

Low back pain is neither a disease nor a diagnostic entity of any sort. The term refers to pain of variable duration in an area of the anatomy afflicted so often that it has become a paradigm of responses to the external and internal stimuli. The incidence and prevalence of low back pain are roughly the same but such types of pain ranks high as a cause of disability and inability to work, as an interference with the quality of life and as a reason for medical consultation. In most of the cases of low back pain in sportsperson, the cause is obscure and only in few cases had direct link to some

defined organic existing disease. The lower back is subject to a great deal of strain in many sports activities. Sports activities, such as repetitive impact (e.g. running), a twisting motion (e.g. golf), or weight loading at the end of a range-of-motion (e.g. weightlifting) are greater concerned with damage to the lower back (Sawyer *et al*; 2012) [6].

Running and jogging are excellent forms of aerobic exercise and can become an enjoyable part of one's daily routine. However, running involves repetitive jarring of spine and can worsen a current or emerging back problem. Joints and discs are jarred and compressed by the force of the body leaving the ground and landing on every stride when running or jogging. Back muscles had to work to keep the body upright and in good posture during running. Other muscles associated with the kinetic chain (this is a linkage system that connects the muscles and joints of the body through the facial system) may also influence back pain while running. Use form that reduces the "up and down" stride motion and focuses on forward motion while running; this means leading with the chest, keeping the head tall and balanced over the chest. Wear top-quality cushioned running shoes [7] many sports medicine physicians advocate running with the added cushioning of high quality running shoes to help protect the joints and spine from the jarring impact of running. While this approach is controversial, some studies indicate that running barefoot may be preferable than running with shoes. If this is an approach that sounds attractive, it is advisable to start slowly, first by walking barefoot and on a soft surface, such as grass or sand, and slowly progressing to walking on a hard surface, running on a soft surface and possibly running on a hard surface. Consider running on softer surfaces, such as grass, a padded track or treadmill rather than concrete or asphalt. Maintaining strong abdominal muscles and core body muscles will help stabilize the lower back while running, which in turn will help with keeping proper form and focusing on the forward motion. In general, swimming is an excellent form of low impact aerobic conditioning that is easy on the back and spine. Unlike running or many other forms of aerobic exercise, with swimming there is practically no impact on the spinal structures. The water supports the body, relieving stress on all joints in the body. For many with osteoarthritis or other forms of joint pain or severe back pain, pool therapy and light swimming is part of the recommended therapy. Use proper form for front strokes, such as the crawl or breaststroke, while swimming; keep body level in the water (hold lower abdominal muscles up and in) and keep the head straight rather than lifted. If preferable, swim with side or back strokes instead of front strokes. Roll the body to the side and keep the chin in when taking breaths during the crawl, rather than jerking the head backward, to reduce the amount of movement in the neck while swimming. Use a snorkel to eliminate the need to move the head for breaths. Wear goggles to reduce improper head movements when trying to keep water out of the eyes. Use flotation devices (noodles, boards, life preservers, wet vest) to maintain proper form when swimming [3].

As a general rule, before one begins or makes changes to a weightlifting routine, it is important to know the condition of one's back and keep weight amounts within personal limits. If anyone has experienced back pain, it is advisable to first get an evaluation from a primary care physician, chiropractor, physiatrist or other spine specialist before beginning lifting weights. Specific guidelines that are useful in helping to prevent back injury include: Use less weight, but do more repetitions when lifting weights. Consider using a training

machine rather than free weights for certain weightlifting exercises. This point is important to discuss with both a spine specialist and trainer, understanding there is a trade-off. A machine may reduce stress on the back (for example, quadriceps done sitting at a machine versus squats holding weights) and can generally be used by someone with little or no supervision. But free weights add proprioception (self-regulation of posture and movement in response to the free weights) that a machine does not. Proprioception is an added benefit in helping enhance the body's balance and stability. Use a spotter when working with free weights to protect the back from possible sudden movement or excess strain. Consider wearing a belt for weightlifting (first ask the recommendation of an athletic trainer or spine specialist, as there are conflicting studies on the merits of belts). Some spine specialists maintain that while there is no concrete evidence that a belt protects the back while weightlifting, it does help as a reminder to maintain proper form. Do not perform exercises such as the clean-and-jerk, dead-lift, snatch or squat without proper supervision, because these exercises may pose greater risk for back injury and back pain. Treatment for chronic back pain remains notoriously difficult, and no single panacea has emerged. Often, surgery is offered as an ultimately desperate last measure, but almost always it is unjustifiable and usually fails to provide permanent relief (Thomas *et al*: 2012) [8].

Knee Pain

Knee joints are predisposed to variety of injuries of the extensor mechanism because the hip joints are wider than the knees in a neutral standing position. The natural Y-shaped configuration to the leg bones prognoses uneven contraction of the quadriceps and problems such as hyperextension of the knees make these natural imbalances even worse. As a result, when person contract the quadriceps to straighten the leg, the unevenness of the contraction tends to pull the kneecap to the outside. The greater pull of the outermost quadriceps the vastus lateralis is the innermost quadriceps the vastus medialis is mostly responsible for counter acting this pull. This muscle tends to be weak and underused, while the outer thigh muscle tends to be stronger from overuse. In fact physical therapists consider exercises to strengthen this neglected muscle key in the rehabilitation of knee injuries [9]. The kneecap is designed to slide along a groove in the femur, and it has to move smoothly within that groove to do its job well. If it goes "off track" and it often does, it grinds away at the cartilage underneath and destabilizes the knee. The ensuing wear and tear is a key reason for knee replacement surgery, which a lot of people believe is nieces scary because they think the cartilage is "gone." But the truth is that cartilage can grow back, albeit slowly. The main problem is that if we don't correct the imbalance pull of muscles on the kneecap, we will continue to grind our cartilage down faster than our body can replenish it. When the kneecap slides straight up and down the femoral groove the joint remains healthy if it slides up and to the outside, it will grind away the cartilage and damage the joint (Cheung *et al*: 2014) [10].

Management of sports injuries through Yoga & Ayurveda

Yoga therapy is a holistic practice and form of therapy that includes breathing techniques, movements, and exercises along with psycho-physiological regimen. It is well documented in traditional Yoga texts and mentioned in the contemporary books of Ayurveda (Internal medicine). Besides, nowadays it is widely used by scholars of western

science and other scholars of alternative system of medicine for regaining balance and wellbeing in healthy person as well as in ailing one. At the core of its practice, Yoga seeks to assist each patient at aligning with their body's own innate state of breathing, being and healing. Through its comprehensive approach, Yoga therapy assists patients in managing not only the symptoms of their problems but also the sources of their overall pain and suffering, leading to a more longer lasting benefits in all areas of life. In Yoga therapy the therapist acts as a guide to assist the student in becoming aware of all parts of themselves and including uniting them with their own innate ability to heal. This yoking process occurs at three main interconnected levels such as the energy body, mind and physical body. Yoga poses which are performed in erect posture such as *Tad asana*, *Vrikshasana*, *Ardhachakrasana*, *Katichakrasana*, *Trikonasana*, *padahasthasana* etc are beneficial in cases of shoulder and knee injury. While Yoga poses such *Bhujangasana*, *Shlabhasana*, *Dhanurasana* etc are performed in laying posture, found effective in back pain [11].

Ayurveda advocates variety of therapeutic measures for the prevention and cure of ailing ones since antiquity. For minor injury in sportsperson, medicated or non-medicated oleation (*snehana*) as massage, fomentation (*swedana*) with medicated herbs in the form of water vapor or without water vapor as sweating purposes and local vasti therapy with medicated oil is quite beneficial. In case of major injury above mentioned measures along with herbal, herbo-mineral, mineral and mercurial preparation are employed for therapeutic purposes under the concerned experts.

Kativasti/Prishthavasti: A time-honored intensive treatment highly recommended for relieving fatigue of the upper or lower back pain. *Kativasti* is a therapeutic application in which wearable warm medicated oil is poured into a black gram dough ring and placed on the spot of pain or discomfort. The deep fomentation of the medicated oil radiates through the muscles releasing tension, stiffness and reduces intensity of pain. The duration of *kativasti* is maintained for a period of 45 minutes for significant result. A light massage with the spa's therapeutic oil enhances the benefits of this treatment, leading to deep relaxation and comfort. At least three treatments of *Kativasti* or *Prishthavasti* are recommended for maximum benefit. It not only minimizes the intensity of pain and stiffness by pacifying *vata-dosh* but also improve the quality of life of sportsperson.

Pichu: An authentic traditional treatment for relieving stress and stiffness of joints or back. Cotton and linen pads '*Pichu*', soaked in hot medicated oils are gently placed on affected joints or back for a period of 30 minutes to offer immediate relief from pain and discomfort. The warmth of the soaked pads seeps into the body and induces a deep sense of relief. Short, gentle and rhythmic massage strokes followed by a medicated herbal pack further alleviate stress and enhance the healing process and impart soothing effect. At least three treatments of *Pichu* are recommended for maximum benefit.

Shanikavasti: This treatment is useful in inflammatory and degenerative conditions of the spine. The therapeutic oil remains placed over the affected areas by making a circular bund with a semi solid paste of black gram powder that holds hot medicated oil followed by a soothing massage for a period of 45 Minutes.

Prishtha mardana: It is also as back treatment. The first casualty is commonly observed in sportsperson is the shoulder and back, which is affected with pain, stiffness and tension. This treatment has been created to eliminate stress and bring relief through back and deep shoulder massage with or without medicated oil for a period of 60 minutes. After back treatment fomentation is advocated for better result.

Champi: It is known traditional Indian head massage. This technique is traditionally performed by barber at the end of hair cutting and by servant to the owner for variety of problems related to hair and head. Traditionally it was believed that this luxuriant technique promotes hair growth; restore the natural shine and glossiness of the hair. Now it is developed at many spas's center as specific therapy for the management of tension and problems related to neuro-musculo-skeletal. For this purpose leaves of different plant (such as *Amla*, *Brahmi*, *Jatamansi*, Curry leaves and *Neem*) are used along with medicated oil for head massage for a period of 45 minutes to propagate long lasting and enriching benefits. This massage releases muscular tension from the head, neck and shoulders, creating a deep sense of relaxation and joy as well as clarity of thought. So, it can utilize for the care and cure of sportsperson under well trained therapist.

Patra swedana: A variety of herbs with high medicinal value are packed in leaf bundles which are then soaked with medicated oil used to massage the body for a period of 30 minutes for better effects. It is an additional therapy to any of the above mentioned therapies. It not only relieves the joint pain but also helpful in removing stiffness of the body, improving blood circulation and improving the functions of joints & muscles.

Discussion

The above mentioned measures act directly to pacify vitiated *Vatadosha* through Ayurvedic pharmacodynamic i.e. *rasa*, *guna*, *virya*, *vipaka* & *prabhava*. Thus, these measures minimize the intensity of pain, check joint stiffness and improve mobility of joints. Indirect way it act on vital point i.e. *Marma* point; to enlightened hidden inner healing power, by virtue of this act it vitalize the whole systems of body in general and locally it check the painful mechanism, which is generated during sports injury. This noxious stimulus on the *Marma* points through deep pressure, vibration, massage etc leads to unpleasant sensation or tingling sensation causing activation of some pathways in the body systems having multifactorial effects like having beneficial influences on the chemical environment of nearby joints, facilitation of tissue repair processes, segmental inhibitory processes within the central nervous system and activation of descending inhibitory pathways projecting from the brain to spinal cord. The peripheral pathway may consist of activation of the afferent fiber mainly A delta and C fibers which carry stimulation to CNS where it may stimulate, the descending noxious inhibitory control (DNIC) system, which is an endogenous pain modulating system, lead to decrease in pain sensation and relaxation.

Beside these measures certain classical Ayurvedic drugs such *Sanjeevani vati*, *Agnitundi vati*, *Tab. Godanti bhasma*, *Dashamulaghana vati*, *Ashwagandha churna* along with medicated oil such as *Mahanarayana tail*, *Panchaguna taila*, etc and certain neo formulation such as *Rhumagold Tab & oil*, *Jointcare Tab & oil*, etc. are effective under prescription of Ayurvedic scholar in the cases sports injury.^{12, 13}

Conclusions

We finally conclude that back, knee and shoulder injury is usually not a disease but a constellation of symptoms that usually, which are observed in sportsman in their day to day practice. The back pain is emerged as biggest obstacle in variety of sports activity followed by knee and shoulder injury. But there management in modern medicine is not up to the mark, required other remedial measures to solve the problems of sports injury. In this concern, the standing poses of healthy yoga provide powerful and effective means for strengthening and stabilizing knees & shoulder, helping to overcome structural imbalance. While lying poses of Yoga therapy provide effective relief in back pain. Ayurvedic approaches such as preparatory parts of *panchakarma* and pacificatory measures including *marma* therapy; are emerged as newer healing tools in injured sports man in recent years.

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