

Indigenous treatments and application of Ethnomedicine for treating sports injuries and other ailments

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Abstract: Present investigation deals with the Indigenous medicinal practices for curing orthopaedic sports injuries and other injuries. Physical exercise is an important and essential thing for wellbeing of mental and physiological aspects of a person. Several field trips to the study area were made to collect information by the aboriginal and others through interviewing local chiefs, priests, vaidyas, herbal practitioners, elderly people and educated youths. The methodology was adopted as described by earlier scientists. A total of 83 species belonging to 75 genera and 42 species have been recorded which are being potentially exploited by the tribal and non-tribal groups in treating sports injuries. There is an urgent need for follow-up ethno pharmacological screening based on tribal claims and beliefs and formulates and standardizes some herbal medicines based on ethno therapeutics either with single plant or in combination for their safe and sustained use for human welfare.

Keywords: Indigenous Medicinal Practices, Sports Injuries, Eastern Ghats of Andhra Pradesh, India

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I. Introduction

“Mens sana in corpore sano” is latin phrase, which means “A sound mind in a sound body” or “A Healthy Mind in A Healthy Body”. Physical exercise is an important and essential thing for wellbeing of mental and physiological aspects of a person. As per latest census, the total population in India is 1.324 billion (2016), which is equivalent to 17.74 % of the total world’s population and we stand second place in the world. The total population of Teens and youth is more than 50 % and majority of them are from rural areas. India would really become rich and well-disciplined in all the fields, if all these 50 % youth of this population are truly involved in sports.

In sports and games, sustenance of injuries is the most common thing for an athlete and is much more, at his early stages due to poor and interrupted training practices, and lack of proper equipment. There are hundreds of different types of sports injuries and out of which, the injuries that are commonly being experienced among athletes are as shown below.

Runners Knee - (P F P S): It is patella femoral syndrome. Patella sometimes falls on the knee causing swelling leading to muscle imbalance of two major muscles that aid in proper tracking of knee cap against thigh bone. The muscle imbalance can create swelling making the tracking problem worse.

Anterior Cruciate Ligament (A.C.L) Strain or Tear: The Anterior cruciate ligament is one of the four major ligaments which is critical to the stability of knee joint. Its primary purpose is to restrain forward motion of the shin bone. An ACL injury occurs when ligament is torn resulting knee “giving- out or buckling” causing instability of knee joint. In acute cases it requires surgical corrections for recovery.

Achilles tendon injury: Achilles tendon is the largest tendon in the body. It stretches from bones of our heel to calf muscles. It is useful for, pointing toes towards floor and raise up on tips of toes. This injury is caused as a result of tear and rupture of the tendon due to sudden movements in running, lifting of foot in push off, and abrupt actions, while playing in the games like basketball, volley ball, tennis, which becomes too much for the tendon to bear and handle the strain from sudden movements. Wearing of high heels shoes, can also stress tendons. If the rupture of tendon is mild, RICE treatment is the answer for cure and if the rupture is on higher side, surgery is the only remedy. [RICE means R = Rest, I = Ice, C = Compressions, E = Elevation]

Dislocation of Shoulder / Ball and Socket Joints and also Other Joints: Shoulder joint is the weakest bone joint in the body and is subjected to a great deal of force during certain athletic activities. Many shoulder injuries are caused due to lack of flexibility, strength or stabilisation. If it reoccurs from time to time, in playing games, the remedy is surgery only.

Tennis or Golf Elbow: It is also called as lateral epicondylitis, which is an inflammation and discomfort of tendons attached to the elbow, that is resulted due to over use of arm and fore arm muscles. The outcome is discomfort around the bony prominence of the elbow. RICE treatment, stretching the muscles gently

and to strengthen the muscles around the elbow, fore arm, and wrist are the remedial measures. If the pain persists for 6-12 months continuously, surgery may be required.

Ankle Sprain - Sprains and Strains: are caused by fall or twist of the body. Ankle sprains are the most common and are generally caused due to running on uneven surfaces or landing off imbalance happening after jumping. A strain is a stretch or tear of a muscle or tendon which connect your muscle to your bones. Rest, Ice, Compression, Elevation (R I C E) are the preliminary remedial measures for treatment.

Spine - Lower Back Pain: For curing this in the early stages, strengthening of all the muscles around the spine to be done through physio therapy, stretching, as well as intake of special diet and RICE treatment are very much useful for recovery.

Shin Splint Syndrome: Shin bone (Tibia) is a bone available on the front of lower leg between ankle and knee. The inflammation of the periosteum, a membrane, encasing shinbone which is resulted due to strenuous athletic activity. Inadequate rest and over use of lower leg muscles, usage of shoes without proper cushioning effect are the causative factors, which finally end up with pain, discomfort, inflammation and swelling all along the shin bone. The constant pounding further, can cause minute cracks / stress fractures in shin bone.

Groin Pull: The Groin muscles run from the upper to inner thigh right above the knee. Groin pulls appear in people who play foot-ball, Hockey , soccer, occur due to sudden jumping, change of direction while running, results from too much stress on the muscles of groin which may stretched or torn. This can be cured with RICE treatment which may take 6 months period for its cure.

Ham String Strain: Ham string muscle is located on the back of thigh. Tear and strain in the Ham string muscle/ tendon, results pain in the back of thigh. RICE treatment is to be done for its cure.

Hip Flexor Strain: Hip flexors are the muscles found on the upper – front side of thigh useful to lift the knee towards trunk as well as to assist moving leg away from the other leg. This injury is caused due to sudden sprinting, quick turns, and sudden starts, in playing the sports events. The symptoms are feeling pain with raising the leg like, while climbing the stairs which can be experienced like bruising in front of the upper thigh and groin area. This could be relieved by RICE treatment.

Concussions: Concussions are defined as injuries resulting clotting of blood inside between skin and muscles as well as in the brain, caused due to blows, injuries, hitting of cricket/ hockey balls or falling

Sciatica: It is a back pain that travels from Lumbar-sacral plexuses down to the buttocks thigh and back of legs or even to feet. It is a radiant pain associated with numbness resulted from Cycling, Golf, Tennis and other sports.

First Aid, Immediate medical treatment and post injury management measures like RICE ie., R-rest, I-ice, C-compression, E-elevation are to be provided. Bed rest is very much crucial for an early recovery of an athlete. After that, curing the sports injuries by adopting ethno botanical practices is very much useful for early recovery, qualitative healing, and pain relief without any side effects. In case of bone fractures, if ethno botanical species are used, the reunion of bones occurs very much quickly and the quality of reunion is also very good. Same case with dislocation of bone joints, spinal cord pain, and other sports injuries. Andhra Pradesh State is ethnobotanically well-explored; most of the work done was during 1985-2002. Different research workers like Balaji Rao et al (1995) [1], Banerjee (1977) [2], Chetty, K.M. & K.N. Rao (1989.) [3], Dahdouh-Guebas et al (2006) [4], Goud et al (1997) [5], Hemadri et al (1987) [6], Kumar and . Pullaiah (1998) [7], Raju Reddy (2005) [8], Nisteswar and Kumar (1980) [9], Reddy et al (2002) [10], Savitramma et al (2007) [11], Thulsi Rao et al (2007) [12], Upadhyay and Chauhan (2000) [13], Reddy et al (2008) [14], Prayaga Murty et al(2012) [15], have been worked on ethnomedicine and ethnobotany from Andhra Pradesh. In the present study information was gathered on sports injuries and other ailments along with their treatment through ethnobotanical and other traditional methods.

Study area

The Eastern Ghats are a long chain of broken hills that pass mainly through three states viz., Orissa, Andhra Pradesh and Tamilnadu (Legris and Meher-Homji, (1982) [16] They run about 1750 km with an average width of about 100 km between Mahanadi and Vaigai rivers along the Indian east coast. In Andhra Pradesh and Telangana they situated between 120 38' – 22° N latitudes and 780 50' – 840 46' E longitudes. The altitudes range from 300 – 1000 M above MSL and the vegetation varies from semi-evergreen forests to scrub jungles. Tribes like Koyas, Kondareddis, Valmikis, Chenchus, Lambadas, Jatapus, Savaras, Bagatas, Porjas, Khonds, Yanadis and Yerukalas are inhabitants of the forest regions of Eastern Ghats.

II. Material And Methods

Several field trips to the study area were made to collect information on sports injuries practices by the aboriginal and others through interviewing local chiefs, priests, vaidyas, herbal practitioners, elderly people and educated youths. The methodology was adopted as described by Jain (1964, 1981, 1987,

1999) [17-20], Chadwick and Marsh (1994) [21], Hemadri (1994) [22] and Martin (1995) [23]. Each medicinal practice was cross checked with 3 or 4 informants. Ethnoveterinary data and the vernacular names were collected for documentation. Plants specimens were collected and identified by referring to standard Flora, viz. Hooker (1872-1897) [24], Gamble and Fischer (1915) [25], Pullaiah (1997) [26] and few other local floras. After collection of the required plant materials, further processing including the methods of preparation of infusions, dosages, different poultices used for sports injuries and for pain management has followed

Decoction: The Root/ Stem/ Bark etc., powders are gently boiled in pure water for 30 minutes. Dosage for adults:5 grams per 1 day. 5 grams of plant material powder as indicated is mixed in 100ml. of water and consumed twice a day in two split doses, in the form of Decoction/Hot or Cold water infusions. The decoctions/infusions are to be prepared every day afresh and should not be stored.

Poultice – I. Along with the specified plant material, paste / powder prepared, the below mentioned ingredients are to be mixed and to be made into homogeneous fine paste for external application.1) Garlic clefts 3 nos. Paste. 2) Black pepper 8 NOS. powder 3) Shell lime powder 2 to 3 grams. 4) Jaggery 5 grams. 5) Egg white yolk -Adequate quantity- To make all the ingredients into homogeneous paste and applied on the skin uniformly. A thin white cloth or a muslin cloth is to be wrapped around, and splints are to be placed around and bandaged.

Poultice- II. Along with the specified plant material paste/ powder, the below mentioned ingredients.1) Black peppers- 8 nos. powder; 2) Mustard seed 5 grams powder; 3) Baalinta bolu 5 grams (gum of commifra sp.); 4) Paluku sambrani 5 grams (Benzoine), 5) Gomutra shilajit 5 grams- powdered or made into soft (All these ingredients are available in Ayurveda pachari shops. 6) An egg white yolk- optimum quantity is added, to make all ingredients into a homogeneous paste along with the specified plant material and applied on the skin around the fracture, with uniform thickness. A thin white cloth is wrapped around on which clefts are placed and bandaged.

III. Result And Discussion

The study recorded a total of 83 species belonging to 75 genera and 42 species have been recorded which are being potentially exploited by the tribal and non-tribal groups in treating sports injuries. The in detailed information like remedies, part used, dosage and mode of preparation are presented in (Tables 1-9). And the following results have been obtained from the present investigation.

For curing, all bone joints dislocation: knee acl / pcl tear, achilles tendon injury, tennis elbow, shin splint syndrome, damage caused to ligaments and tendons.

Most commonly affected joint is, the ball and socket joint of arm shoulder. If the muscles surrounding shoulder joint like, Deltoids, Trapezius, pectoralis, subscapularis, Biceps, Triceps, are strong enough and fit, the joint is safe. This is applicable for all bone joints. If the muscles surrounding the joints, are weak, soft and are not in a fit condition, the joint is susceptible for damage and dislocation. Rarely, we come across with the dislocation of knee, ankle, elbow, ball and socket joints of pelvic girdle and other joints. As soon as the injury is sustained, ie., if the bone joint is dislocated, the victim should be taken to Hospital nearby. Immediate medical care is to be ensured. After X ray, joint relocation and other things, the below mentioned Ethno botanical/ Folk medicinal practices are to be followed, for quick, qualitative and effective recovery. After undergoing these plant treatments one can observe shrinkage of the elongated/stretched, ligaments and tendons. Hence surgeries can be avoided in majority of the dislocation cases if the following ethno botanical treatment practices are adopted sincerely.

Table-1: Plants used for curing, all bone joints dislocation

S.NO	Name of the species. Family. Local name	Plant part used	Dose	Method of preparation and usage
1.	<i>Pavonia zeylanica</i> Malvaceae Kaaru benda	Root powder	3 grams	Root powder is mixed in 30 ml. of Goat's milk along with a pinch of pepper powder, turmeric powder, gomutra shilajit and taken orally in the morning every day for 15 days.
2.	<i>Pavonia odorata</i> Malvaceae Chiru benda	Root powder	3 grams	Root powder is mixed in 30 ml. of Goat's milk along with a pinch of pepper powder and 2 grams of turmeric powder, 2 grams of gomutra shilajit and taken orally in the morning every day for 15 days.
3.	<i>Hibiscus micranthus.</i> Malvaceae Nitya malli	Root powder	3 grams	Root powder is mixed in 30 ml. of Goat's milk along with a pinch of pepper powder 2 grams of turmeric powder, 2 grams gomutra shilajit and taken orally in the morning every day for 15 days
4.	<i>Sida cordata</i> Malvaceae Tirunaalla benda	Root powder	3 grams	Root powder is mixed in 30 ml. of Goat's milk along with a pinch of pepper powder 2 grams turmeric powder and 2 grams of gomutra shilajit and taken orally in the morning every day for 15 days
5.	<i>Bamboosa arundanaceae</i>	Leaves and	3 grams	Plant powder is to be mixed with 500 mg of shell lime

	Poaceae. Mullem veduru	stem powder		powder, 5 grams of patika bellam and mixed in 50 ml of Goat's/cow's milk taken orally daily for 15 days. Tendons and ligaments shrinkage takes place.
6.	<i>Dendro calamusstrictus</i> Poaceae Sadanam veduru	Leaves and stem powder	3 grams	Plant powder is mixed with 500 mg of shell lime powder, 5 grams of 'patika bellam' in Goat's or cow's milk and taken orally daily for 15 days.
7.	<i>Tinospora sinensis</i> Menispermaceae Tippa teega/ guduchi	*Stem powder / paste *Root powder	50 grams 3 grams	Applied externally as specified in Poulitice. To be mixed in 30 ml of goat's milk along with 1 no. Garlic cleft paste, and 3 nos. black pepper powder and taken internally orally every day in the morning for 15 days.
8	<i>Cissus quadrangularis</i> Vitaceae Nalluru	Root paste Shoot paste	3 grams 25 grams	To be mixed in 30 ml of goat's milk along with 1 no. Garlic cleft paste, and 3 nos. black pepper powder and taken internally every day in the morning for 15 days. Applied externally as per the procedure specified in poulitice I
9	<i>Capparis sepiaria</i> Capparaceae Nalla vuppi	Root powder	2.5 grams	The powders of the species shown against S. Nos. 9 and 10 are mixed and made in to 50 ml. of decoction, by mixing 2 grams of turmeric powder, 1 gram of pepper powder and 2 grams of gomutra shilajit given once in a day for a one week. This relieves pain in tendons and Tendons of Achilles.
10	<i>Dichrostachys cinerea</i> Mimosaceae Veluthuru chettu	Root powder	2.5 grams	

For Curing Runners Knee (Pfps) and for Cartilage Development in Bone Joints

Abnormal, unscientific and indiscriminate usage of bone joints, lack of proper rest, and less intake of the diet containing Calcium and vitamin D, less secretion of synovial fluid, are the main reasons resulting tendons and ligaments damage as well as for wear and tear of cartilage in athletes. Knee joints are the Load / weight bearing joints which function to allow movement of legs. The thigh bone the femur meets the large shin bone, the tibia to form the main knee joint. The joint has inner medial and outer lateral compartment. The knee cap the patella joins the femur to form the third joint, called patellofemoral joint. The patella protects the front portion of the knee joint. The knee joint is surrounded by a joint capsule with ligaments strapping the inside and outside joints called collateral ligaments as well as crossing within the joint called cruciate ligaments. The collateral ligaments run along the sides of the knee and limit the sideways motion of the knee. The anterior cruciate ligament (ACL) connects the tibia to the femur at the centre of the knee and function to limit the rotation and forward motion of the tibia. The posterior cruciate ligament (PCL) located just behind the ACL limits the back ward motion of tibia. All of these ligaments provide stability and strength to the knee joint. The meniscus is a thickened cartilage pad between two joints formed by femur and tibia. The meniscus acts as a smooth surface to move on, also cushioning effect in the joint. The knee joint is surrounded by fluid filled sacs called bursae, which serves as gliding surfaces that reduces friction of tendons. Below the knee cap, there is a large tendon (patellar tendon) which attaches to the front of tibia bone. There are large blood vessels passing through the area behind the knee. The large muscles of the thigh called quadriceps move the knee joint. In the back of the thigh, the hamstring muscles flexes the knee.

Runner's Knee is a patellofemoral pain syndrome (P.F.P.S) / Friction syndrome or Iliotibial band friction syndrome, is common among the runners, weight-lifters, cyclists, and hikers. Iliotibial band is a thick and wide band of fibres that originates at the iliac crest of pelvis and runs down along the lateral part of thigh to the lateral condyle of Tibia and provides stability to the knee joint and prevents knee joint from lateral gliding movements. As per the census, every year in our country India, more than one million runners and other athletes are being affected and suffered from this runner's knee problem. The stress of running, cause irritation, where the patella rests on thigh bone and causes knee cap pain. The patella is a sesamoid bone located within the patellar tendon that connects the quadriceps muscle to the lower leg bone or Tibia. If the quadriceps are not strong enough, the entire thrust of body and its weight, in the momentum, is transferred directly to knee joint. As a result, the tendons (of quadriceps) and ligaments are prone for damage. Over a period of time, wear and tear of the cartilage in the knee joints could be experienced. The way out, for this problem starts progressing from, the diagnosis, X rays, medical guidance, adequate rest, Ice fomentation, addressing the length of iliotibial band, performing workouts without weights, stretching, extensions of legs, strengthening hip muscles, quadriceps, and calf muscles and there on.

The following treatments from ethno botanical practices, including the 10 Species mentioned in the above table, are to be followed, for Pain management, for curing Runners knee, as well as for osteoarthritis, and for restoration of worn out cartilage (if the damage is below 60 percent), in all the bone joints of the body including Knee joints, spinal cord. These practices are very much useful, effective, and cost effective and are without side effects.

Table-2: Plants used for Curing Runners Knee and for Cartilage Development in Bone Joints

S. No	Name of species. Family. Local Name	Plant part used	Dose	Method of preparation and usage.
11	<i>Boswellia serrata</i> Burseraceae. Anduga	Gum resin	1 gram	This plant helps in development of cartilage
12	<i>Commifera mukul</i> Burseraceae. Guggulu	Gum resin	1 gram	The decoction of S.No.13 ie., Borhaevia is to be prepared in 50 ml of water in which, Boswellia gum shown in Sl. No.11 and Commifera mukul gum shown in s.no. 12 and 2 grams of Gomutra shilajit (an exudation obtained from rocks of certain hills) are added in hot decoction and given for restoration and development of worn out cartilage and for pain relief. This is to be done for 40 days. A rejuvenator and builds the tissues
13	<i>Borhaevia diffusa</i> Nyctaginaceae Punarnava	Whole plant powder	2 grams	
14	<i>Nyctanthes arbor-tristis</i> Oleaceae Paarijaatham	Stem bark powder	2 grams	The plant powders and paste of the species shown against the sl. nos. 14, 15 16, are to be made into 70 ml. decoction, by adding one tea spoon of Fenugreek seed (2 grams), consumed in two split doses every day orally for a period of one month for cartilage development and for pain relief Alpinia galangal is a Rejuvenator and pain reliever which helps to strengthen the weak tissues and acts as a carrier in the blood stream for transporting the medicine to all the tissues. This is a pain reliever.
15	<i>Phyllanthus emblica</i> Euphorbiaceae Vusiri	Fruit pulp powder	2 grams	
16	<i>Alpinia galanga</i> Zingiberaceae Dumpa rastram	Rhizome paste	2 grams	
17.	<i>Hyptis suaveolens</i> Lamiaceae Adavi tulasi/ Maga beea	Seeds	5 grams	The seeds are to be soaked in 50 mi. of water in a glass and taken orally in the morning for 4 months. The seeds are hygroscopic and are useful in cartilage development.
18	<i>Ocimum basilicum</i> Lamiaceae Sweet basil/sabja	Seeds	5 grams	The seeds are soaked in 50 mi. of water in a glass and taken orally in the morning for 4 months. The seeds are hygroscopic and gives cooling effect to the body.
19	<i>Sesamum indicum</i> Pedaliaceae Tila/ Nuvvulu	Seeds	25 grams	The seed is powdered, mixed with organic jaggery made in to balls taken orally. Or Soaked in water in the night and in the morning made into paste, mixed in 70 ml of milk, boiled, mixed with jaggery taken every day for 4 months for cartilage and synovial fluid development.
20	<i>Tamarindus indica</i> Caesalpiniaceae Tamarind tree	Seed Cotyledons	500 grams	The cotyledons powder is to be mixed in 100 grams of 'Patika bellam'/ Misri/ crystalline form of sugar powder is added. 10 grams of this powder is mixed in a glass of hot milk and taken orally every day for cartilage development and for promotion of synovial fluid.
21	<i>Bauhinia vahlii</i> Caesalpiniaceae Adda/ Maadapaku	Cotyledons in the seeds	500 grams	The cotyledons powder is to be mixed in 100 grams of Patika bellam/Misri/crystalline form of sugar powder, is added. 10 grams of this powder is mixed in a glass of hot milk and taken orally every day for cartilage development.
22	<i>Sesbania grandiflora</i> Fabaceae Avisa, Agastya	Seed		Cooked and eaten regularly. Helpful for the health of all joints and for secretion of synovial fluid
23	<i>Linum usitatissimum</i> Linaceae	Seed powder	10 grams	Seed is fried gently, powdered mixed in hot water/milk and taken daily orally for a period of 3 months. Helpful for the health of all joints
24	<i>Moringa oleifera</i> Moringaceae Munaga	Leaves		Leaves are used in preparation curries and eaten regularly or at least in alternate days, for the health of bones and joints.

For curing back pain or pain in the spine or vertebral column in specific and also hamstring strain; hip flexor strain; groin pull; ankle sprain

Spine starts from the base of the skull ie., from Atlas and runs downwards perpendicularly, up to the coccyx (tail bone), and forms the supporting axis of the body. It houses/encloses, protects the spinal cord and provides a stable attachment for the muscles of the trunk. Spine consists of totally 33 vertebrae, the individual and interlocking bones. Starting from medulla oblongata of skull ie., from Atlas bone, Cervical vertebrae are- 7 nos. (in the neck region), Thoracic vertebrae are- 12 nos. (in the chest region), Lumbar vertebrae are- 5 nos. in the abdomen region, fused sacrum vertebrae are-5 nos. and Coccyx vertebrae are- 4 nos. (in the pelvic region). Out of this 33 vertebrae the upper 24 vertebrae are pre-sacral and the bottom 9 vertebrae are fused. In between vertebrae bodies, there are inter vertebral disks/ Fibro cartilaginous bodies, and they are the principal joints between two vertebrae, which act as shock absorbers between vertebrae. Severe pain in the spine, that is being experienced by many people, is due the factors like 1. Injury caused physically to the spine. 2. Wear and tear of cartilage/ inter vertebral discs. 3. A slipped/ prolapsed/ herniated disc, or ruptured disc material can enter the spinal canal, squashing spinal cord, but more frequently, presses on the nerve root, causing severe lower back pain. 4. The muscles existing around the spine and all along the spine, with tendons, and the ligaments, becomes soft and weak due to, lack of proper physical exercise, there by passing on the heavy weight load

directly on the vertebrae resulting mechanical damage and sprains. Hence the actual reason for painful spine is to be diagnosed, identified clinically through X rays, scanning and through consultations of medical expertise. If the problem is due to the damage caused to the cartilage and to the ligaments or tendons the above indicated plants treatment is useful. If the condition is critical and serious with prolapsed disc, surgical correction is the only way.

In allopathy, treatment for the herniated discs without surgery are, 1) Bed rest is prescribed for a period of at least 2 months or more. 2) Usage of NSAIDs, (Non-Steroidal Anti Inflammatory Drugs) like aspirin, ibuprofen, muscle relaxants for relieving spinal muscle spasm, oral steroids, corticosteroids, opioids/narcotics, anti-depressants which block pain messages being received by brain and increase the effects of endorphins which are the natural pain killers of our own body. 3) Epidural steroid injections (not more than 3 injections are given in one year). Whereas, the side effects by usage of the above drugs are very much serious and very difficult to overcome.

If the disc prolapsed condition is not that much serious, with the help of below indicated ethno botanical medical practices, adequate bed rest for at least 2 months, incorporation of Physical therapy exercises as a part of treatment, like gentle stretching, Ice and heat therapies, and through Chiropractic manipulations, we may overcome the problem and can recover without going for a surgery.

Table-3: For Relieving Pain in Spine Covering, Cervics, Thorasic, Lumbar and Sacrum

S. No	Name of species. Family Local name	Plant part Used	Dose	Method of preparation and use
1	<i>Derris indica</i> Fabaceae, Kaanuga	Root powder	5 grams	Root powder decoction is given orally once in a day in the morning for 3 days for severe back pain and joint pains
2	<i>Capparis sepiaria</i> Capparaceae Vuppi chettu	Stem powder	5 grams	Stem powder decoction is given once in a day orally in the morning for 3 days for relieving pains.
3	<i>Moringa concanensis</i> Moringaceae Kaaru munaga	Stem bark or root	20 grams	Stem bark is exposed on gentle fire, squeezed to get juice, mixed with 30 ml. of goat's milk and given to consume orally in the morning and with an interval/gap of 3 days again one dose is given and again after 3 days. From the day 1 up to 9 days of treatment, the only diet to be given is hot rice to be mixed with fried chilli powder, garlic, salt for relieving severe back pain, and numbness in feet.
4	<i>Borassus flabellifer</i> Arecaceae Taati chettu	Roots	10 grams	Borassus roots and sphaeranthus are pounded well, the juice extracted is given in two split doses per day orally for relieving from Lumbago pain and joints pain.
5	<i>Sphaeranthus indicus</i> Asteraceae Boda taramu	Whole plant	10 grams	
6	<i>Hemidesmus indicus</i> Periplocaceae sugandhapaala	Roots	25 grams	Plants of sl.nos. 6,7,8, Hemidesmus, Aristilochia and piper longum roots are pounded together by adding some sugar and this mix is chewed @ 5 grams/1 day for 15 days, for relieving from the dragging pain of lower limbs.
7	<i>Aristolochia indica</i> Aristolochiaceae Gaadida gadapa	Root	25 grams	
8	<i>Piper longum</i> Piperaceae Pippallu	Root	25 grams	
9	<i>Butea monosperma</i> Fabaceae Moduga	Flowers	5 grams	Flowers paste is given orally in the morning once in a day on empty stomach for relieving from Lumbago pain. The flowers collected before a rain/rains are preferred.
10	<i>Holarrhena antidysenterica</i> Apocynaceae paalakodisa	Stem bark powder	2 grams	The powders sps. shown against sl. nos, 10, 11, 12 ,13, Holarrhena, cordia, Ficus, semicarpus, peppers 8 nos. powder, one garlic cleft paste, are mixed in water in the night, heated mildly in the morning and the infusion obtained is given orally in two split doses per day for 10 days for lumbar pain
11	<i>Cordia dichotoma</i> Boraginaceae Banka nakkera	Stem bark powder	2 grams	
12	<i>Ficus religiosa</i> Moraceae Raavi	Stem bark powder	2 grams	
13	<i>Semecarpus anacardium</i> Anacardiaceae	Stem bark powder	5 grams	
14	<i>Atlantia monophylla</i> Rutaceae Muriki nimma	Stem bark powder	5 grams	Decoction is given orally every day for 15 days for alleviating all joint pains
15	<i>Barleria prionitis</i>	Root powder	5 grams	Decoction is given orally every day for 6 days for alleviating

	Acanthaceae. Mulu gorinta			lumbago pain.
16	<i>Leonotis nepetifolia</i> Lamiaceae Yerra tummi	Whole plant powder	5 grams	Decoction is given orally every day for 6 days for relieving from joint pains.
17	<i>Lawsonia inermis</i> Lythraceae Gorinta	Leaves juice	10 ml	Leaves juice is mixed in 50 ml. of water and given every day for one month for regaining touch sensation lost in lower limbs.
18	<i>Terminalia arjuna</i> Combretaceae Tella maddi	Stem bark powder	5 grams	Decoction is given every day in the morning for 10 days.
19	<i>Hygrophylla auriculata</i> Acanthaceae Mulu gorinta	Seed	5 grams	Seed is soaked in 60 ml. of water in the night and to consumed orally
20	<i>Sterculia urens</i> Sterculiaceae Tapasi	Stem bark powder	5 grams	Decoction is given every day in the morning for 10 days
21	<i>Limonia acidissima</i> Rutaceae Velaga	Stem bark powder	5 grams	Decoction is given every day in the morning for 10 days
22	<i>Solanum trilobatum</i> Solanaceae Vuchhintha teega	Green fruits and tender shoot tips	50gram	Green fruits and tender shoot tips are cooked and eaten as curry for alleviating pains.
23	<i>Vitex negundo</i> Vitex trifolia Verbinaceae	leaves	10 grams	Leaves are made into paste by adding 6 nos. of pepper and 1 cleft of garlic , mixed in 150 ml of water and to be boiled to get 60 ml. of decoction. This decoction is to be taken orally twice a day daily in the morning and in the evening for 15 days

Table-4: For sprains External applications for pain management, curing all types of sprains at knees, spine, ankle, and in all the bone joints

S. no.	Name of the species Family Local name	Plant part used	Dose	Method of preparation and usage
1	<i>Senna occidentalis</i> Caesalpiniaceae Kasinda	Leaves paste	50	Leaves paste is mixed with the ingredients of poultice-I, and applied externally on the limb affected by SPRAIN and bandaged.
2	<i>Capparis zeylanica</i> Cappraceae Are - donda	Leaves paste	25 grams	Leaves paste is mixed with the ingredients of poultice-I, and applied externally on the limb affected by SPRAIN and bandaged.
3	<i>Gossypium herbacium</i> Malvaceae Prathhi	Seed paste	25 grams	The seed is made into a paste mixed with the ingredients of poultice I, and bandaged.
4	<i>Cuscuta reflexa</i> Convolvulaceae Bangaru teega	Whole plant paste	200 grams	The plant is made into a paste mixed with the ingredients of poultice I, and bandaged
5	<i>Merrima tridanta</i> Convolvulaceae Seethamma savaralu	Leaves paste	25 grams	The plant is made into a paste mixed with the ingredients of poultice I, and bandaged
6	<i>Cardiospermum helicacabum</i> Sapindaceae Budda kakara	Leaves juice	25 grams	The leaves juice is applied on the painful limb and smoothly rubbed till all the juice gets absorbed into the painful area.
7	<i>Barleria montana</i> Acanthaceae Adavi decembralu	Leaves juice	25 ml.	The leaves juice is applied on the painful limbs and smoothly rubbed till all the juice gets absorbed into the painful area.
8	<i>Sarcostemma acidum</i> Asclepiadaceae soma valli	Whole plant paste	25 grams	The plant is made into a paste mixed with the ingredients of poultice I, and bandaged
9	<i>Dodonea viscosa</i> Sapindaceae Bandedu	Leaves pounded powder	25 grams	Mid veins are removed from the leaves and leaves are made into powder, by pounding the green leaves, mixed with the ingredients of poultice I, and bandaged
10	<i>Vanda tessellata</i> Orchidaceae Badanika	Whole plant paste	25 grams	The plant is made into a paste mixed with the ingredients of poultice I, and bandaged
11	<i>Pergularia daemia</i> Asclepiadaceae Dustapaaku	Leaves paste	25 grams	The leaves are made into a paste mixed with the ingredients of poultice -I, and bandaged
12	<i>Cissus quadrangularis</i> Vitaceae Nalleru	Tender stem paste	25 grams	The stem is made into a paste mixed with the ingredients of poultice I, and bandaged

Table-5: External application of medicated oils for sprains pain management in joints and for relieving from body pains

1	<i>Ricinus communis</i> Euphorbiaceae Caster/ Aamudam	Seed oil Roots extract	1 lit. 1 lit.	1 lit. of Root extract (is obtained from boiling 1 kg of root powder in 4 lits of water, to get finally 1 lit of root extract) is mixed with 1 lit. of pure castor oil, and boiled till it becomes 1 lit. and applied on all painful joints and sprains.
2	<i>Vitex negundo</i> Verbinaceae Vaavili	Leaves extract Gingili oil	1 lit 1 lit	1 lit. of leaves extract (is obtained from boiling 1 kg of pounded green leaves in 4 lits. of water to get finally 1 lit of leaves extract) is mixed with 1 lit. of gingili oil, boiled till it becomes 1 lit. and 10 to 15 grams of pepper powder is added to it and applied on all painful joints and sprains
3	<i>Dodonea viscosa</i> Sapindaceae Bandedu	Leaves extract Gingili oil	1 lit	1 lit. of leaves extract (is obtained from boiling 1 kg of green leaves wet powder in 4 lits. of water to get finally 1 lit of leaves extract) is mixed with 1 lit. of gingili oil, boiled till it becomes 1 lit. and 10 to 15 grams of pepper powder is added in it. This oil is applied on all painful joints and sprains
4	<i>Cissus quadrangularis</i> Vitaceae	Roots extract Gingili oil	1 lit 1 lit	1 lit. of roots extract (is obtained from boiling 1 kg of fresh roots paste in 4 lits. of water to get finally 1 lit of roots extract) is mixed with 1 lit. of gingili oil, boiled till it becomes 1 lit. and 10 to 15 grams of pepper powder is added in it and applied on all painful joints and sprains
5	<i>Cinnamomum camphora</i> Lamiaceae Karpuram chettu <i>Mentha piperata</i> Lamiaceae Menthol <i>Trachyspermum ammi</i> Apiaceae Vaamu, omam	Camphor extract of the plant Menthol extract of the plant Vaamu puvvu extract of the plant	100 Grams 100 grams 100 grams	In a glass bottle keep 1) 100 grams of pure camphor lump, the extract of cinnamomum camphora (Mudda karpuram) + 2) 100 grams of Menthol crystals of Mentha species(pudina puvvu) + 3) 100 grams of Vaamu puvvu, crystals of the extract of Trachyspermum ammi, together for 10 minutes. A chemical reaction takes place and all these three solids would be converted into an oil, and application of same externally gives relief for all the pains. All the above 3 items are available in ayurveda herbs pachari shops namely,1.Mudda karpuram, 2. Pudina puvvu 3) Menthol/ Menthi puvvu. This is better than any other costly pain relieving sprays.
6	<i>Brassica juncea</i> Brassicaceae. Rai seed, Aavalu	Seed oil	10ml	Applied on the painful joints and sprains for relief. This mustard seed oil and the above oil of S. no. 5 can also be mixed and applied.
7	<i>Ruta chalapensis</i> Rutaceae. Sadapaku	Whole plant oil	10ml	Oil is applied on Painful spine, knee joints and painful joints.
8	<i>Calotropis gigantea</i> Asclepiadaceae Jilledu	Leaves	200 grams	500 ml of raw Gingelly seed oil is poured in earthen / stainless less steel vessel or kadai, heated well on fire, pounded calotropis leaves are added in the heated oil. HeatiSng is to be continued for few minutes till the leaves turn grey in colour. Fire is put off, oil is allowed to cool, screened and the oil is applied externally on the painful joints and muscles.

Treatment for Bone Fractures

Occurrence of bone fractures in sports and games is also being experienced now and then. Bone fractures happen accidentally in most of the cases and also due to negligence of sports men, in their initial stages, by not following the rules, techniques, prescribed procedures taught by the coaches in games and sports. Whenever the incidence of bone fracture occurs, the victim is to be taken to Hospital and necessary medical care like X rays, scanning, if required surgery etc., are to be attended. After that, the following Ethno botanical practices in vogue may be followed for curing the bone fractures, for the earliest recovery, for effective pain management and for ensuring qualitative and strong cementing bond in between broken bones.

Table – 6: Plants used for the bone fracture

S. No	Name of the species Family Local name	Plant part used	Dose	Method of preparation and use
1	<i>Senna occidentalis</i> Caesalpiniaceae Kasinda	Leaves paste	25 gr.	To be applied externally as specified in this document under poultice I
2	<i>Solanum nigrum</i> Solanaceae Kaamanchi	Leaves juice	15 ml.	Diluted in water and taken internally for 1 month for joining the fractured bones
3	<i>Eclipta alba</i> Asteraceae Guntagalagara	Whole plant juice	15 ml.	Plant juice is mixed with 2 grams of salt and 30 ml. of water and to be taken orally for 1 month.
4	<i>Ipomea heridifolia</i>	Leaves	20 grams	For external application- Procedure mentioned under poultice

	Convolvulaceae Golla jiddu	paste		II is to be followed.
5	<i>Ipomea sepiaria</i> Convolvulaceae Golla jiddu	Leaves paste	20 grams	For external application- Procedure mentioned under poultice II is to be followed
6	<i>Albizia amara</i> Mimosaceae Chigara/Cheekireni	Leaves paste	20 grams	For external application- Procedure mentioned under poultice I is to be followed

For healing injuries like abbrasions, cuts and wounds occurred in sports the following plants are to be used or external application, for quick healing of injuries sustained in sports and games

1. *Tridax procumbens*. Family: Asteraceae. Local name. Gaddi chamanthi/ Gaayapaku. Juice obtained from leaves is applied externally on the wound/cut/abrasion and the crushed leaves are to be placed over it and bandaged.
2. *Hyptis suaveolens*. Family: Lamiaceae. Local name. Bhu Tulasi/ Mahavira. Leaves are crushed and to be placed over the cut or wound and bandaged.
3. *Ipomea cornea*. Family: Convolvulaceae. Local name. Gayapaku/ Rubber Aku. Leaves are crushed and to be placed on the wound and bandaged.
4. *Argyrea nervosa*. Family: Convolvulaceae. Local name. Samudra pala. Leaves are pounded finely and placed on the wounds and bandaged for quick healing.
5. *Heliotropicum indicum*. Family: Boraginaceae. Telu mani/ Naga danthi Leaves are crushed into paste, applied externally on wounds/cuts and bandaged.
6. *tum conyzoides*. Family: Asteraceae. Local name. Pumpullu, Goat Weed. Leaves are made into paste and applied externally on wounds.
7. *Ddonea viscosa*. Family: Sapindaceae. Local name. Bandedu, Banderu. Leaves are pounded and applied externally on wounds, cuts etc., for quick healing as well as for bone fractures.
8. *Achyranthus aspera*. Family: Amaranthaceae. Local name. Uttareni Leaves are made into paste and applied externally on wounds, cuts, and abrasions.
9. *Wihania somnifera*. Family: Solanaceae. Local name. Aswagandha, Penneru. Leaves are crushed into paste and applied externally on wounds and cuts associated with swellings, pain for early recovery as well as for healing bone fractures.
10. *Helanthus annus*. Family: Asteraceae. Local name. Surya kantham, Sun flower. Leaves are crushed into paste and applied externally on wounds for healing.
11. *Lannea coramandelica*. Family: Anacardiaceae. Localname . Gumpena. Leaves paste/Stem bark powder is applied on wounds for quick healing.
12. *Oroxylum indicum*. Family: Bignonaceae. Local name. Dundilam, Pampini. Root bark powder is applied externally for healing cuts/ wounds and bone fractures.
13. *Curcuma longa*. Family: Zingiberaceae. Local name. Pasupu. Rhizomes powder is applied on the wounds/cuts for quick healing.
14. *Leptadenia reticulata* /Jeevanthika, Family : Asclepiadaceae leaf juice applied on cuts.
15. *Flacourtia indica* /Puliregu, pulivelaga, Family : Flacourtiaceae leaf juice applied on cuts or wounds.

For relieving from body/joints pain through hot water herbal bath

The following plants provide immediate relief from all types of body pains, like pains of Arthritis, pains of all limbs of body, Back pain, Knees pain and also muscular pains caused due to lactic acid secretion, in excess, resulted from out of physical exertion. A medicated bath is to be taken in the evening ie., at the end of the day, with hot water containing the infusions of the indicated plants, to the maximum bearable temperature. This is very much effective and by this, a person can get immense relief from all types pains for a period of 1 to 3 days, without using harmful pain killers

Table -7: Plants used for relieving from body/joints pain through hot water herbal bath

S. No	Name of the species Family Local name	Plant part used	Dose	Method of preparation and use
1	<i>Vitex negundo</i> Verbinaceae vaavili	Leaves	1 kg	About 20 lits. Of water is to be boiled in a vessel by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief.
2	<i>Dendrocalamus strictus</i> Poaceae	Leaves	1 kg	About 20 lits. Of water is to be boiled in a vessel by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief.
3	<i>Azadirachta indica</i> Meliaceae Neem	Leaves	1 kg.	About 20 lits. of water is to be boiled in a vessel by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief

4	<i>Eucalyptus globulus</i>	Leaves	1 kg	About 20 lits. of water is to be boiled by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief
5	<i>Abutilon indicum</i> Malvaceae Tuthuru benda	Leaves	0.5 kg	About 20 lits. of water is to be boiled by mixing about 0.5 kg of green leaves in the water and the hot water bath is taken to get immediate relief
6	<i>Senna occidentalis</i> Caesalpiniaceae Kasinda	Leaves	0.5 kg	About 20 lits. of water is to be boiled by mixing about 0.5 kg of green leaves in the water and the hot water bath is taken to get immediate relief
7	<i>Dodonaea viscosa</i> Sapindaceae Bandedu	Leaves	1 kg	About 20 lits. of water is to be boiled by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief
8	<i>Achyranthus aspera</i> Malvaceae Vuttareni	Whole plant	0.5 kg	About 20 lits. of water is to be boiled by mixing about 1 kg of whole plant in the water and the hot water bath is taken to get immediate relief
9	<i>Hibiscus planifolius</i> Malvaceae Konda pratti	Whole plant	1 kg	About 20 lits. of water is to be boiled by mixing about 1 kg of whole plant in the water and the hot water bath is taken to get immediate relief
10	<i>Cleorodendron phlomidus</i> Verbenaceae Takkali	Whole plant	1 kg	About 20 lits. of water is to be boiled by mixing about 1 kg of whole plant in the water and the hot water bath is taken to get immediate relief
11	<i>Cardiospermum helicacabum</i> Sapindaceae. Vekkudu teega	Leaves	0.5 kg	About 20 lits. of water is to be boiled by mixing about 0.5 kg of whole plant in the water and the hot water bath is taken to get immediate relief
12	<i>Albizzia amara</i> Mimosaceae Chigara/ cheekireni	Leaves	1 Kg.	About 20 lits. of water is to be boiled by mixing about 1 kg of green leaves in the water and the hot water bath is taken to get immediate relief

For immediate healing of breathing pain / muscles catch in the back side of thorasic region occurred due to spasm in the muscles.

This muscle catch occurs suddenly, in back side of thoracic region either towards left/Right side and is associated with unbearable pain. A person cannot take Lung full of breathing, during his respiration (not even 10 percent of the filing capacity of lungs). Neither he can sit nor sleep properly. The severity of the pain and the discomfort cannot be relieved even by using strong doses of pain killers. The victim can't walk and stand erectly. It lasts for 10 to 15 days, if it is not attended to properly. The Ethno botanical treatment for curing this problem can be done by using the plant *Abutilon indicum* of Family Malvaceae, Tutturu benda. Fresh leaves about 8 nos. are to be plucked from the plant and for cleaning, dip them wash in water for 2 to 3 times and to keep them in mouth, to bite and grind them with your teeth by closing your mouth. While doing so for a minute or two, a gas is generated in the mouth and the same is blown, with little force, in the ears of the victim carefully to reach tympanum, without any leakage, firstly, in the ear existing towards the other side of painful area and to be shifted to another ear. By changing the leaves in the mouth, this should be repeated for 3 times. Likewise, to be done, in the evening also. This is to be done for one to two days, depending on the severity of pain. This is very simple remedy, but is very much effective and cost effective. One can experience immediate relief.

For Healing Severe Ankle Pain (Madima soola/ Pain in the back of an ankle).

A permanent cure for Ankle Pain or Madima soola in Ethnobotanical treatment is possible with a plant called Citrullus colocynthis of cucurbitaceae family. The trade name is Colocynth/ Bitter apple and the local name is Verri puchha, Yeti puchha.

Method of Treatment: Fresh and matured colocynth fruits are plucked and inserted for 5 to 10 minutes, in the hot ashes obtained by pulling out from a fire wood burning CHULA, after the cooking is completed. By that time the colocynth becomes hot and partially cooked. The person suffering from ankle pain has to trample the colocynth with painful ankle of his bare foot. This is to be repeated thrice in a day preferably in the evening, by changing the colocynth fruits, and to be continued for a period of 3 days. The pain, miraculously disappear and the patient will not get pain in that ankle in his life time. In some tribal areas *Cocconia grandis* (Dhonda) leaves paste is applied externally on the painful ankle for relieving pain.

For Healing Concussions

For healing concussions (Kavuku debbalu) , *Dodonaea viscosa* green leaves are pounded and tied with cloth on the concussions. *Zizyphus mauritiana* of family Rhamnaceae, local name Regu / Badari . The stem bark powder of *Z. mauritiana* is mixed in 20 grams of goat's milk and taken internally to alleviate pain. In Homeopathy, the plant extract of Arnica Montana of sun flower family, is the best drug used for healing all types of concussions quite effectively, including concussions in brain resulted due to heavy blows in sports.

For dilation of blood vessels and for quick warming up of body in winter.

There is no doubt that, warming up exercises are very much essentially required to be done by the athletes, before participating in any sports, for ensuring blood circulation to all the tissues in the body, and for dilation of vessels and Respiratory track for exhibiting their best performance. Whereas, in winter season / in cold climate, for quick warming up and for dilation of blood vessels and respiratory track vessels, intake of 1 or 2 ml. of canola oil (*Brassica juncea* of family Brassicaceae, Rai seed/ Aavalu) mixed in hot water along with a pinch of yellow camphor and a little quantity on pure honey orally, gives the best and quick results for getting the body warmed up besides, affording protection/resistance from common cold, cough, and fevers (if taken regularly every day in winter season)

For Healing Sciatica

Sida cordifolia of family malvaceae, local name chiru benda/ Naaga bala, whole plant powder 2 grams mixed in 60 ml. of water, infusion is prepared and taken orally and *sida cordifolia* plant green leaves are to be mixed in gingelly oil and applied externally. *Nyctanthes arbor-tristis* of family oleaceae local name paarijatham bark powder 5 grams infusion is taken internally for curing sciatica. *Zizyphus mauritiana* of family Rhamnaceae, local name, Regu/Badari

10 grams of *Vitex negundo* leaves are made in to paste by mixing with 6 nos. of pepper and 1 no. of Garlic cleft, to be mixed in 150 ml of water and boiled to get 60 ml. of decoction and to be taken orally in two split doses morning and evening for 15 days.

For Development Of Haemoglobin And Platelets In Blood

Eclipta prostrata of family Asteraceae local name Gunta galagara. 10 grams of leaves are to be made into paste by adding 2 grams of sea salt, black peppers 3 nos powder, 1 no., Garlic clove paste and taken orally in empty stomach twice a day morning and evening for 20 days. Stamina and ability increases in athletes with the increase of Haemoglobin and platelets. *Carica papaya* of family Caricaceae, local name Boppayi. 10 grams of juvenile leaves less than 2'' length paste is to be mixed in 60 ml. of water and to be taken orally in the morning in empty stomach for 20 days.

For Curing Rectal Prolapse: A condition that occurs when part of the large intestine slips outside the anus, being experienced by over 1 million cases per every year in India. This may occur in some athletes who does strenuous and rigorous practice. There is no specific treatment in allopathy for this, except surgical correction. In ethno botany, the plant, *Abutilon indicum* is useful for curing this. The green leaves, 50 grams are pounded well into paste and to be placed over the prolapsed rectum area and tied with lian cloth tightly every day for 3 days only. The prolapsed rectum shrinks / zooms in, to regain normal state without any medication and surgery.

Table -8: Plants used for healing swellings, resulted due to fractures, sprains, dislocations.

S.No.	Species Family Local name	Parts used	Dose	Method of preparation and use
1.	<i>Moringa oleifera</i> Moringaceae Munaga	Leaves	100 grams	Moringa leaves are made in to paste, 3 grams of shell lime powder is added again made into fine paste and applied externally once in two days for shrinkage and curing of swollen parts and for pain relief.
2	<i>Cassiytha filiformis</i> Lauraceae Paachi teega	Whole plant body	100 grams	Made into paste and applied around the swollen part for reducing the swelling and pain relief.
3	<i>Tamarindus indica</i> Caesalpinioideae chintha	Green leaves	200 gr.	Made into fine paste
4	<i>Alangium salvifolium</i> Alangiaceae	Green leaves	200 gr.	Made into fine paste
5	<i>Cissus quadrangularis</i> Vitaceae Nalleru	Stem	100 gr.	S. No. 5 is made into fine paste and to be mixed and grinded together with the leaves pastes of sl. Nos. 3 to 5 and applied on the skin around the swollen part, tied with a cloth. Within a day or two, the swelling would be reduced to normal state.

Special diet being prescribed by the local village vidyas for effective and quick Healing of Bone fractures/ Dislocations of joints, for Strong & Healthy Bones, development of Synovial fluid and cartilage in the Bone joints

- *Setaria italica*/ Fox millets. Family. Poacea, Local name: Korralu and
- *Triticum dicoccum*/ wheat. Family. Poaceae , Local name : Godhumalu, , seeds of Godhumalu and

korralu are made in to Rawa(broken in to small pieces) , cooked and eaten daily in place of Rice/pulka.

- *Eleusine coracana*/ Finger millet. Family: Poaceae, Local name: Ragi. Ragi seeds powder is cooked with water to make Jawa/ soup, to be consumed with curds/jaggery made from ie., *Saccharum officinarum* /sugar cane juice and to be taken orally daily.
 - *Sorghum bicolor*/Great millet, Family: Poaceae. Local name: Jonna. Jonna seeds powder is used to prepare Rotis and eaten along with palak/Bhendi curry daily.
 - *Vigna mungo*/Black gram, Family: Fabaceae. Local name: Minumulu. Seeds are soaked in water, grinded into paste roasted in gingely oil- olive oil and vadas are prepared and consumed daily.or, seeds are to be fried in ghee, powdered, mixed with cow ghee and jaggery powder made into round balls called Sunni vundalu (each weighing about 20 grams) and eaten daily.
 - *Sesamum indicum*/Gingelly seed, Family: Pedaliaceae, Local name: Nuvvulu. Nuvvulu seeds are to be powdered and to be mixed with pure jaggery and eaten daily. Egg white yolk 2 nos. are to be consumed / swallowed in raw along with jaggery daily followed by intake of one glass of cow milk mixed with one to two grams of Gomuthra Shilajith
 - *Abelmoschus esculanthus* / Ladies finger. Family: Malvaceae, Local name : Bhendi is to be consumed daily.
 - Piper betle / Betel leaves, Family: Piperaceae. Local name: Tamala paku: Betel leaves 3 to 4 nos are to be chewed along optimum quantity of shell lime powder daily and to be gulped without spitting.
 - *Annona squamosa* /Custard apple, Family: Anonaceae. Local name: Seethaphal. Fruits are to be taken before meal
 - *Annona reticulate* / Family: Anonaceae. Local name: Ramaphal. Fruits are to be taken before meal
 - *Psidium guajava* / Guava, Family: Myrtaceae. Fruits are to be taken before meal
 - *Musa paradisiaca* / Banana, Family: Musaceae. Fruits are to be taken before meal
 - *Phoenix dactylifera* / Date palm, Family:Arecaceae, Local name; khajoor fruits are eaten daily.
 - *Citrus sinensis* / Batevia, Family: Rutaceae, Local name: Bathhahi, Fruit juice is to be consumed.
 - *Citrus lanatus*/Indian squash melon. Family: Cucurbitaceae,Puchhakaya, Juice of fruit pulp along with seeds is to be consumed daily.
 - ❖ *Spinacia oleracea* / spinach, Family: Chenopodiaceae. Leaves are made into curry and taken.
 - ❖ *Basella alba* / Basella rubra, Bachhali, Family: Basellaceae, Leaves are made in to curry and eaten daily for cartilage development.
 - ❖ *Lycopersicon esculentum*/Tometo, Family: solanaceae. local name : Tometo.
 - ❖ *Daucus carota* /carrot, Family: Apiaceae
 - ❖ *Beeta vulgaris* /Beet root, Family: Chenopodiaceae
 - ❖ *The above 3 items each weighing 100 grams each are to be made into juice by adding adequate water and to be taken orally every day*
 - *Moringa olefera* / drumstick leaves, Family: Moringaceae
 - *Cajanus cajan* / Red gram seed, Family:Fabaceae
- The Above two items are to be cooked and consumed along with Jowar roti . Intake of Rice and other curries are to be avoided completely. Optimum quantities of the above mentioned qualitative food is to be taken.*
- *Cocos nucifera* / coconut, Family: Arecaceae. Coconut water is to be consumed profusely every day.
 - *Amaranthus viridis*/ Thotakura / Family: Amaranthaceae is to be made it to curry and to be consumed with jowar roti.

Intake of herbs and other diet recommended for athletes in place of harmones & steroids

Intake of specified and the required diet by the athletes regularly, is very much essential for achieving the best results and for creating new records at all levels. Certain plants and special diet as furnished below, that provide the strength vigour and energy to the athletes, almost equal to that of steroids, without any side effects and problems. This diet being prescribed is to be taken regularly for a period of at least 6 months without brake for excellent results. Whereas, regular and uninterrupted exercise/practice is a must for intake of this diet as being done after steroids intake by the athletes.

Table -9: Plants used for strength vigour and energy to the athletes

S. No	Name of the species Family Local name	Plant part used	Dose	Method of preparation and use
1.	<i>Withania somnifera</i> Solanaceae Aswagandha	Root powder	10 grams	The ingredients of species 1 to 4 are to be mixed with 1 gram of pure Gomutra shilajit and Sidda makara

2.	<i>Tinospora cordifolia</i> Menispermaceae Tippa teega	Whole plant extract	1 gram	dwajam or 'swarna bhasmam' and to be taken orally with hot milk every day for at least 3 to 4 months prior to competitions. Heavy practice is to be done after the intake of the above ingredients.
3	<i>Commifera mukul</i> Burseraceae Guggulu	Bark gum resin	1 gram	
4	<i>Clitoria ternatea</i> Fabaceae. Sanka pusphi	Whole plant extract	3 grams	
5	<i>Arthrospira platensis</i> and <i>Arthrospira maxima</i> are the two edible species are called spirulina which is a Single cell - biomass of family cyano bacteria, the blue-green algae	Whole plant	2to3 grams	To be mixed with fruit juice and to be taken orally. This Is very rich in proteins when compared to meat, and also contains Thiamine(B1), Riboflavin(B2), Nicotinamide(B3), Pyridoxine(B6), Folic acid (B9), Ascorbic acid (vit-C), Cholecalciferol (Vitamin D), Vit. A and E. It is a source of calcium, Chromium, Copper, Iron, Manganese.
6	<i>Triticum dicoccum</i> Wheat Poaceae	Green leaves juice	30 ml	Wheat/Barley grass juice contains rich in proteins about 20%, Detoxifier, Helps in weight loss, Increase energy levels, acts as anti-inflammatory agent, prevents cancer, controls blood sugar, Restores blood's alkalinity, improves digestion, slows down ageing process, supplements vitamins A, B1, B2, B3, B6, B9, B12, C, E, and k. It also contains Beta carotene (vit. A), pantothenic acid(B5). 30 ml of the said leaves juices are to be taken internally every day by the athletes for best results.
7	<i>Hordeum vulgare</i> Common Barley Poaceae	Green leaves juice	30 ml	

In addition to the above, Dry fruits like Almonds, Pistacia, Dates and Buchnanian are also used for development of strength and vigour.

Several researchers like Ramadasa *et al.* (2000) [27], Sudhakar Reddy and Raju (2000) [28], Nagalakshmi (2001) [29], Jeevan Ram and Venkata Raju (2001) [30], Muralidhar Rao and Pullaiah (2001) [31], Ramarao Naidu (1996) [32], Abbas (2003) [33], Imam *et al.* (2003) [34], Venkataratnam and Venkata Raju (2005) [35], Mubeen *et al.* (2005) [36], Rao *et al.* (2006) [37], Reddy *et al.* (2006) [38], Reddy & Subbaraju (2005, 2007) [39-40], Narasimha Rao and Prayaga Murty (2014) [41] and Prayaga Murty and venkaiah(2010) [42] have been worked and focused on ethnobotanical and ethnomedicinal plants aspects only but no one concentrate on the sports medicine in Andhra Pradesh

IV. Conclusion

There is an urgent need for follow-up ethno pharmacological screening based on tribal claims and beliefs and formulates and standardizes some herbal medicines based on ethno therapeutics either with single plant or in combination for their safe and sustained use for human welfare.

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N.V. Jayanth Babu, et al. "Indigenous treatments and application of Ethnomedicine for treating sports injuries and other ailments." *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)*, 15(2), (2020): pp. 44-57.