



## REVIEW ARTICLE

### AYURVEDA: A COMPLETE AND COMPREHENSIVE SPORTS MEDICINE

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#### ABSTRACT:

In today's world, Sports and physical training have become very professional and competitive. Aggressive competition and intense desire to excel in his field leads to unbearable stress for sports persons. More over physical training and fitness has become an important aspect of any sport. This is the main reason behind increasing incidence of sports injuries. Simultaneously increasing ratio of psychological and psycho-somatic disorders are also the subjects of worry for the sports persons. Sports medicine has always been difficult to define because it is not a single specialty, but an area that involves health care professionals, researchers and educators from a wide variety of disciplines. Its function is not only curative and rehabilitative, but also preventative, which may actually be the most important one of all. Now a day this science is developed as a super specialty branch of the medical science. Importance of sports medicine is therefore increasing day by day. Āyurveda being a complete science of health care can contribute in this field also. Principles, treatment modalities, dietetics and drugs of Ayurveda can play very useful and important role in this field. This review article is an attempt to showcase the role of Ayurveda in the field of Sports.

**Keywords:** *Vyayama, Ahara Vigyana, Bhagna, Marma therapy, Rasayan.*

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## INTRODUCTION

Sports medicine, as a separate medical specialty has a fairly recent origin and it is quite obvious to ask how a more than five thousand years old medical system can have any kind of role in this field. When we go through the *Ayurvedic* doctrines we definitely do not find direct references regarding a specialty called sports medicine nor do we have readymade management plans for sports related ailments. It requires a lot of close observation and correct perception of the implied meaning of the ancient words of wisdom to appreciate the scope of *Ayurveda* in this field. When we keenly observe we find enormous possibilities. It makes us appreciate a very significant contribution that *Ayurveda* can make to improve the effectiveness of sports medicine as a whole. Detail description of *vyayama* including its indications, limitations and contraindications are found in Ayurvedic literature. Over and above this, the concept of Sport injuries and their management can be spotted in the reference made by *Acharya Sushruta*, about the *Bhagna* (fractures) and treatment of *Vrana*. Detailed description of *Ahara vigyana* of Ayurveda is also very useful part of sports nutrition. Strength of the body has prime importance in the field of sports. Root of the problem like doping in sports is expectation of getting extra strength. Concept of *Bala* is elaborately mentioned in the classics

of *Ayurveda*. Various aspects of *Bala* also can help to improve strength of the sports person. The need of time is to elaborate the Ayurvedic concepts in the context to sports medicine.

## MATERIALS AND METHODS

This is an Extensive literary work conducted using different classical textbooks of Ayurveda along with electronic databases. Literature regarding the aspect of sports medicine in Ayurveda was properly explored and screened in Ayurvedic Texts.

## AYURVEDIC INTERVENTIONS IN SPORTS MEDICINE

Ayurveda can intervene at various levels in sports medicine from selection of athlete or sports persons to diet and daily regimen of a sports man. Various important aspects of ayurvedic sports medicine are summarized below:

### ➤ Selection of sports person :

Any body can be an athlete. But if one wants to excel he needs to follow certain ayurvedic protocols, narrated in Ayurvedic texts as *Dashvidha Pariksha*<sup>[1]</sup>.

- **Prakriti (constitution of the body)**

It is the inherent characteristic property of an individual which refers to the genetically determined physical and mental makeup. It is determined by sperms, ovum and condition of the uterus. *Dosha* dominating the sperms and the ovum during the time of conception and also those inhabiting the uterus at that time

determine the *prakriti* of the individual <sup>[2]</sup>. Food and regimens of the mother aggravates *doshas* at that time and also determine the physical constitution of the body. The physical fitness and performance are highly influenced by the constitution of the body. Ayurveda classifies humans basically into three. They are *Vata*, *Pitta* and *Kapha* and their combinations. They will remain unchanged until death. Every person is born with this inbuilt and unchangeable *prakriti*. Depending upon the sport event involved a *vata prakriti* person can be a better athlete than a *kapha prakriti* person. Similarly a person specializing in chess should be *kapha* predominant person.

- **Sara (Excellent essence)**

*Charaka* has described *Sara* examination under the tenfold examination techniques. The term *Sara* means the essence. This is the purest form of *dhatu*. Depending upon the dominance of the *dhatu*s individuals are categorized as; 1. *Tvak sara* 2. *Rakta sara* 3. *Mamsa sara* 4. *Medo sara* 5. *Asthi sara* 6. *Majja sara* 7. *Sukra sara* 8. *Satwa sara / Ojo sara* <sup>[3]</sup>. The eight subtypes of *sara* may be assessed in term of relative quality i.e. *sarva sara purusha*, *madhyama* and *asara* or *avara*. If we refer to the characteristics of all these forms, we observe that among these the *asthisara* and *majja sara* individuals can be better sports person who can perform well in outdoor events.

- **Samhananam (Compactness)**

*Samhananam* denotes compactness of the body <sup>[4]</sup>. A compact body is characterized by symmetrical and well grown bone, well knit joints and well bound muscles. Clinically patient may be assessed *pravara*, *madhyama*, *avara samhanana* depending on the compactness of body organs.

a. *Pravara samhanana* –Symmetrical and well demarcated bones, well joints, well bound muscles, strong built, excellent strength.

b. *Madhyama samhanana* –Moderately symmetrical and demarcated bones, moderate joints, moderately bound muscles, moderate built, moderate strength.

c. *Avara samhanana* –Weakly Symmetrical and demarcated bones, Weak joints, Weakly bound muscles, Weak built, Weak strength.

Evenly well-demarcated bones, well-bound joints, well formed muscles are known as compact body. Individuals having well compact body are strong and having good strength. Compactness of the body can be taken as an indication for athletic ability. Compactness of a particular part of the body or group of muscle will be corresponding to their particular sport event. Compactness has significance in events such as weight lifting, sprinting etc.

- **Pramana (Measurement)**

The word *pramana* means measurement <sup>[5]</sup>. By the measurement of the body organs the,

quality and strength of a person can be ascertained. This is determined by measuring the height, length and breadth of the individual organs in comparison with the other organs. A body possessed of organ having proper measurement is endowed with longevity, strength, *ojas*, happiness, power, wealth and virtues. If the measurement is either on the high or low side, the individual possesses qualities contrary to what are mentioned for proper measured body. To be an outstanding athlete one should possess unique proportion of the body other than the normal individual which enable them high mechanical advantage thereby an edge above the fellow competitors.

- **Satmya (Suitability or examination of homologation)**

*Satmya* is defined as the inbuilt ability to withstand<sup>[6]</sup>. It stands for such factors which are wholesome to the individual even when continuously used. Individuals for whom ghee, milk, oil and meat soup as well as the drugs and diets having all six *rasa* are wholesome are endowed with strength, the power of facing difficult situations and longevity. There are four types of *satmya* out of which *Oka satmya* of *Charaka* or *Vyayama satmya* of *Susrutha* can be dealt in detail here. *Oka satmya*<sup>[7]</sup> means the adaptability of a person to a particular activity. It depends upon the daily activity and repetition of an

activity increases the ability of the body to continue the same. *Sushruta*, in the context of *Vyayam Satmya*<sup>[8]</sup> has considered three types of *Vyayam* i.e. physical exercises, pertaining to body, speech and mind.

- **Sattva (psyche-examination of mental faculties) –**

*Sattva* is mind and it regulates the body because it is associated with soul<sup>[9]</sup>. *Sattva* controls the body by conjunction with the self. Based on *sattva* persons are of three types having superior (*pravara*), medium (*madhya*) and inferior (*avara*) *sattva*. Among them, those having superior *sattva* are in fact *sattva sara purusa*. Their stout body frame seems to be stable even in severe affliction either innate or exogenous because of the dominance of *sattva lakshnas*. *Sattwa* is mind. To be a good athlete one should not only have a strong body but a capable mind. Therefore it can be summarized that *sattva sara* individuals will be better in sports.

- **Ahara Shakti (Examination for intake of food)**

Digestive capacity of individual can be examined by two ways that is *abhyavaharana shakti* (the power of ingestion) and *jarana shakti* (power of digestion)<sup>[10]</sup>. Strength and life span of the individuals are determined by the diet. It all depends on the condition of the *agni* residing in the body. If individual possess a good digestive power then he will be able to

sustain the stronger therapies as a consequence he will recover quickly from the afflictions. Person having excellent power of ingestion and digestion of food are claimed to be healthy persons. This kind of person endowed with excellent strength, longevity, joy, good physique, superior mental faculties, full of essence of *dhatu*s, power of resisting any sort of difficulties etc. Thus a good sports person needs to acquire good *Ahara Shakti* so that he can digest the adequate food in adequate quantity because nutrition is an important aspect for every athlete and sports person.

- **Vyayama shakti**

*Vyayam Shakti* is the capacity to perform physical exercises. There are numerous references related to *Vyayama* in the literature of *Āyurveda*<sup>[11]</sup> This description is very vast and expands to all the modern branches of sports science and medicine. Definitions of *Vyayama*, role of *Vyayama* in *Dinacharya* & *Ritucharya*, benefits of *Vyayama*, procedures indicated before and after *Vyayama*, diet of the person who does *Vyayama* daily, etc. are most important references in respects to exercise physiology and sports hygiene. The physical fitness is influenced by many factors such as age, *sara*, *ahara*, mental stability etc. In *Ayurveda* details related to exercises is provided. Physical exercises

are an important aspect for any sports person.

- **Sports Nutrition & Ayurveda**

Even though good diet cannot guarantee success, poor diet can certainly undermine training. *Ayurveda* gives comprehensive description of food substances that can increase muscle mass and physical proficiency. Food should be taken according to eight factors such as nature of food, processing of food, combination, quantity, place, time, dietetic rules, constitution, and combination<sup>[12]</sup>. *Sarvagraha* and *parigraha* are two nomenclatures used for total quantity of food and quantity of individual items of food respectively<sup>[13]</sup>. The list of wholesome items in food would be red *Sali* rice among cereals, green gram among pulses, rock salt among salts, *Jeevanti* (*leptadenia reticulata*) among herbs, meat of deer among animal meats, meat of quail among birds, meat of *Iguana* among the animals living in holes, *Rohita* among fish, *Amalaka* (*emblica officinalis*) among Fruits, barley, water, cow's milk among milk, ghee among clarified animal fats, sesame oil among vegetable oils and honey are prescribed<sup>[14]</sup>.

- **Sports physiotherapy in Ayurveda**

Sports physiotherapy means the use of physical (non medical) techniques for curing the injuries. This branch of sports science is very much important in sports medicine,

because it works on the rehabilitation program of sports persons and restores their performance ability. It cures chronic injuries of the joints; establish maximum movements of extremities and other joints of the body. It works slowly and as per the type of injury and location, it takes different time and management procedure. In many of the disorders Ayurveda advocates *Vyayama* as one of the treatment. Description of *Snana*<sup>[15]</sup> (bath), *Snehana*<sup>[16]</sup> & *Abhyanga*<sup>[17]</sup> (massage), various types of *Swedana*<sup>[18]</sup> (heat application) etc. are treatments which can correlate with physiotherapy. Ayurvedic physicians use these techniques to relieve the pain, stiffness, heaviness and for relaxation etc. actions. Many of them are the chief treatment for *Vata Doṣa*, which is prime and most common cause of sports related disorders.

#### ➤ Sports Medicine & Ayurveda

Sports medicine is application of medical principles according to need of sports person. Ayurveda has very strong basic principles about disease manifestation and their treatment. A sports physician always cares more about the prevention of the health of sports person than the treatment. Therefore primary health education is very useful tool in the field of sports medicine. Science of Āyurveda can contribute much better than any other medicinal science in the field of education. *Swasthavritta* (knowledge of

health and hygiene), *Ahaara Vigyana* (Dietary regimen), *Sadavrittam* (good moral conduct) are the prime topics of health education. This can be served as prophylactic mode of treatment.

Ayurveda also advocates promotion of health with *Rasayana Aushadha*. This part of Ayurveda can play the vital role for enhancing health status of sports man by improving strength, vitality and even immunity<sup>[19]</sup>. Many kinds of herbal, mineral and herbo-mineral *Rasayana* drugs can provide good alternative to modern vitamins. *Ayurvedic Rasayana* may help to reduce the cases of doping (taking of banned drugs) due to their similar kind of effects without any disadvantage. The physical and mental stamina of sportsman indicate perfect health with tridosha and Saptadhatu in their normal condition. However for *Dhatupachaya* (conditioning of Dhatus) and *Balavridhhi* (Strength) naturally the *Rasayana* Therapy is most suitable. It can be adopted during the training programme. For practical purposes *Kuti pravesika* (Indoor) type of *Rasayana* is prescribed<sup>[20]</sup>. Single *Rasayana* drug herb or formulation of various such drugs can be prescribed for general health, and specific formulations are indicated by choosing such *Rasayana* drugs, which would improve the *Mamsadhatu* and *Snayu* (Musculature). They may be selected as per the need and

individual condition of the sportsman from the following:- *Ashwagandha* (*Withania somnifera*) *musali* (*Asoaragys adscebdebs*), *Ksheerini* (*Mimusps hexandra*) *Bala* (*Sida Cardifolia*), *vidari*(*Pueraria tuberosa*) *Kushmanda*(*Benineasa hispida*), *Shalaparani*(*Desmodium gangeticum*), *Kharjura*(*Phoenix sylvestris*) *Amra*(*Mangifera indica*), *Kadali*(*Musa paradisiacal*) and mineral drugs like *shilajatu*(*Bituman*) and *Abhraka* (*Mica*)<sup>[21]</sup>.

A special formulation on *Balya*(strength improving), *Jeevaniya*(invigorating), *Brihaniya*(nourishing), *Shramahara*(relieving tiredness), *Vedanasthapana*(pain relieving) and *Sangyasthapana*(consciousness restoring) drugs can play very important role in different pathological conditions of a sports person<sup>[22]</sup>. *Shramahara* drugs can reduce the fatigue and numbness of exercised sports person. A powerful oil spray formulation from *Vedanasthapana* drugs can help in sprain or strain during the play on the field. *Balya*, *Jeevaniya*, *Brihaniya* can improve the physical strength, energy and vitality of sports persons. Detailed research needs to be done on all these relevant groups of drugs for the overall benefit of sports fraternity.

#### ➤ Sports Injury & Ayurveda

Any bodily damage sustained during participation in competitive or noncompetitive

sports activities. Sports injuries can affect bones or soft tissue like muscles, ligaments, tendons, nerves etc. Those who are overstressed and lack of warming up suffers with these injuries. Injuries in the sports are increasing with the popularization of sports of all types. Though the sports are professionalized and commercialized, the amateur sports are even now the main stay in India. The mental trauma that will grip those unfortunate, otherwise healthy young adults is very much demoralizing. In modern medicine sports injuries can be categorized as<sup>[23]</sup> :

- Acute – Characterized by sudden appearance of symptoms usually associated with Single traumatic incident. These are caused by excessive force applied to bone or soft tissues during sport activity.
- Chronic – due to over use of any body part or parts. According to cause - sports injuries.
- Intrinsic - Arising from specific incidence, not involving any outside agencies e.g. running.
- Extrinsic- Due to contact with an external object. E.g. basket ball.
- According to nature of tissue damage; Strains (muscle/tendon injuries), Sprains (joint/ligament injuries), Contusions and hematomas, Fractures and dislocations,

Wounds (abrasions, lacerations, punctures, blisters)

After thoroughly studying classical texts Sports Injuries as per Ayurveda can be summarized as under-

**Snayu-Asthi-Sandhi** disorders: If *Vata* gets into the *Snayu* (ligament) it causes stiffness, instability, pain and convulsions; if it gets into the *Sandhi* (joints), it causes pain and swelling and impairs their functions; if it gets into the *Asthi* (bones), it causes bone atrophy and cracks and pain<sup>[24]</sup>.

**Urahkshata:** - Excessive physical exercise, lifting heavy weights, excessive study, trauma, excessive sexual indulgence and other activities injurious to the chest produce pulmonary lesions<sup>[25]</sup>

**Kshtaja Kasa:** When the chest of an individual is hurt due to severe physical exercise or weight lifting, excessively loudly reading and other kinds of trauma, there is damage to the chest leading to repeated haemoptysis; this condition is known as the *Kshataja Kasa*. *Vayu*, due to its property of dryness, produces damage to the chest leading to cough<sup>[26]</sup>.

Ayurveda has got very effective remedies that can either be used principally or as a supportive therapy in numerous orthopedic problems encountered by sports persons. The use of pressure points called *marma* forms an important part of treatment in ayurveda<sup>[27]</sup>.

Ayurveda has very simple herbal formulations

that can hasten the process of recuperation after a surgery, rehabilitation of an injured muscle, bone, performance levels. The *Sadya Vrana Upakrama*<sup>[28]</sup>, *Bhagna Prakarana*<sup>[29]</sup> and *Agni Karma Chikitsa*<sup>[30]</sup> of *Acharya Sushruta* can play special role in the management of sports injuries.

## DISCUSSION

A few researches have been conducted to establish the role of Ayurveda in the field of sports medicine in last decade. More analysis and studies are required in this field. Findings of various researches in various aspects of Ayurvedic interventions in the field of sports are summarized below:

### Swati Sanjay Bedekar et al, Pune, 2007

This study was aimed to evaluate the role of *Marma chikitsa* for prevention of *Gulpha Marma* injuries in the sport of Basket ball along with *Snehana* with *Masha Taila* and *Swedana*. *Gulpha marma* is indicated as Ankle Joint. This joint is encircled by muscles & Ligaments. In basketball game, while playing wrong landings causes inflammation & tearing of ligaments. These symptoms result in sprain. The sprain causes constant pain, which makes obstacle to the game. Normally the healing of injured ligament takes the time period 4-6 weeks. This ligament injury must be prevented by physiotherapy, application of tail and oral medicine.



**Table 1: The Statistical analysis of the *Masha Taila* for Normal Ankle and in ankle sprain**

	Dorsi flexion of ankle joint	Planter flexion of ankle joint
<i>Masha taila</i> in Normal ankle joint	0.0007	0.001
<i>Masha taila</i> in ankle sprain	0.0002	0.03

The study results proved that from preventive aspect the application of *Masha Taila* in normal ankle (*Gulpha marma*) as *Snehan & Swedan* with warm water increases flexibility of joint & muscle strength. The Statistical analysis proved that application of the *Masha Taila* for Ankle sprain was highly effective & also relieves pain, regain movements. This recovery & strength of joints happens because of reduced adhesion & influence the direction of new collagen fibers in the healing process. It eliminates toxic accumulation from secondary muscle spasm. It was concluded that *marma* are vital points, which get injured after trauma. These *marma*'s must be protected while playing games. The rigorous wrong movement cause injury to *marma*. These *marma* must be prevented by applying *Snehan & Swedan* before starting the game<sup>[31]</sup>.

➤ **Pritesh et al, Jamnagar, 2007**

This study was carried out with the aim of highlighting the concept of sports medicine in

the literature of Ayurveda. To fulfill this purpose the concept of *Bala* and the efficacy of *Balya* drug was chosen as the field of work. For improvement of *Bala*, four classical *Balya* drugs were selected and administered in the participants. The drug in the form of granules was prepared with four herbs: *Ashwagandha* (*withania somnifera*), *Shatavari* (*asparagus racemosus*), *Bala* (*Sida cordifolia*) & *Kapikachhu* (*Mucuna pruriens*). Drug was prescribed with the *Anupana* of sweetened milk.

For clinical study total 40 subjects were classified in four groups. Two groups were treated with test drug and other two were given placebo drug. All the subjects were selected between the age of 15 to 35 without any bar of sex, religion, economical status etc. The assessment was made with the help of particular criteria. The salient features of the study were:

The drug *Ashwagandhadi* granule was found very effective in *Pramanataha*

*Parikshana*. Statistically highly significant effect was observed in measurements of height, weight, chest expansion, biceps & mid thigh. *The Vivardhamana Dhatu Vaya* (age factor) of the subjects may have helped in achieving these results.

For *Bala Parikshana*, typical type of *Vyayama*, Bench press, Military press, Squats and Standing long jump were selected and in all these tests, the drug *Ashwagandhadi* granule showed excellent effect. But in the vital statistics data (B.P., heart rate etc,) results were not satisfactory.

Observations of biological values like total protein, H.D.L., total RBC, Hb % showed highly significant changes with the *Ashwagandhadi* granule<sup>[32]</sup>.

➤ **G Sendhil et al, Chennai, 2011**

To achieve the purpose of the study, sixty male students studying at PES Institute of Technology and Management, Shimoga, Karnataka were selected randomly as subjects. The age of the subjects ranged from 18 to 25 years. 133 Selected subjects were divided into three groups randomly

Group 1 was undergone resistance training with *asanas* group (RTAG).

Group 2 was undergone resistance training with ayurvedic Massage (RTAMG).

Group 3 control group.

The study was as pre and post test random group design, in which sixty subjects were

randomly selected and divided into three equal groups, each group consisting of twenty subjects. The subjects of each group were measured on criterion variables such as upper body muscular strength, lower body muscular strength, muscular strength endurance, flexibility and cardiovascular endurance (physical variables), resting pulse rate, systolic blood pressure, diastolic pressure and VO2 max (Physiological variable). On completion of measuring pre test subjects of each group, the subjects of control group (group 3) did not undergo any training program apart from regular activities; the subjects of group 1 underwent resistance training with *asanas* group (RTAG). Group 2 underwent resistance training with ayurvedic massage group (RTAMG). Over the 12 weeks of training program the subjects of each group were tested on critical variable as such in the case of treatment. From the result of the study, the following conclusions were made

Resistance training with *asanas* and ayurvedic massage produced a significant improvement in the development of selected physical fitness components of muscular strength, Muscular strength endurance, flexibility, cardiovascular endurance and physiological variables of resting pulse rate, blood pressure and maximum oxygen consumption of men adults. Resistance training with ayurvedic massage is more

effective than *asanas* in increasing selected physical fitness components and physiological variables except cardiovascular endurance in which resistance training with *asanas* performed better<sup>[33]</sup>.

➤ **Vikas Kumar et al, Kurukshetra, 2014**

This randomized controlled, parallel group, single blinded study was conducted on forty eight male hockey players, with a mean age of  $17.4 \pm 1.7$  (aged between 16 to 19 years) years and BMI  $20.9 \pm 2.9$  kg/m<sup>2</sup> from Shri Guru Hari Singh Hockey Academy, Shri Jiven Nager, Sirsa, Haryana. Subjects were randomly assigned into two groups, Group I (n=24): *Withania Somnifera* Group (Experimental) and Group II (n=24): Placebo (Control) group. *Withania somnifera* was used in the form of a standardized aqueous root extract; was obtained from Central Council for Research in Ayurveda and Siddha (CCRAS), Delhi, India. 500mg roots powder of *Withania Somnifera* for each subjects.

The dose (500mg) as prescribed by the doctor and sugar power was filled in gelatin capsules and stored in air tight containers and in room temperature below 30°C throughout the experiment. Drug and sugar capsules were given to their respective groups (Experimental and Controlled) in the dose of 1 capsule/day orally with milk after meals at night for 8 weeks. It was thus a single blinded study, where all the subjects were completely

unaware of drugs which they were going to consume. Maximal Oxygen Consumption Capacity (VO<sub>2</sub>max) in ml/kg/min, Sprint Fatigue Level, Core Muscle Strength & Stability, Flexibility, Agility and level of blood hemoglobin in both experimental and control groups were measured before and after administration of *Withania Somnifera* (read WS) and placebo. Following Results & conclusions were made:

A significant improvement was found in the WS group (Experimental Group) for Maximal Oxygen Uptake Capacity VO<sub>2</sub>max (ml/kg/min.) after 8 weeks of *Ashwagandha* (*Withania Somnifera*) supplementation. Significant improvement was found in the WS group (Experimental Group) for Sprint Fatigue Level after supplementation of *Ashwagandha* (*Withania Somnifera*) for 8 weeks. A significant improvement was found in the WS group (Experimental Group) for Core Muscle Strength & Stability after 4 & 8 weeks of *Ashwagandha* (*Withania Somnifera*) supplementation. No significant improvement was found in the WS group (Experimental Group) for Lower Back and Hamstring Flexibility after 4 & 8 weeks of *Ashwagandha* (*Withania Somnifera*) supplementation. There was a significant improvement in the experimental group for agility after 4 & 8 weeks of *Ashwagandha* (*Withania Somnifera*) supplementation. A significant improvement

was found in the WS group (Experimental Group) for Hemoglobin level after 8 weeks of *Ashwagandha* (*Withania Somnifera*) supplementation<sup>[34]</sup>.

All these researches increase the scope of Ayurveda in sports at various levels. As a nutritional adjuvant, as a pre work out help, as a healer in injuries, as supplemental herbs etc. All these newly found dimensions need to be experimented more and more so that much fruitful results can be found. Collective collaborations with different related departments for further research are the most important task in this field.

## CONCLUSION

Ayurveda has a very strong foundation of basic principles related to various medical specialties. Majority of these principles can be used in the field of sports medicine. Selection of the sports persons based on various factors described in Ayurveda, Deciding daily and seasonal regimens and proper nutrition advised in Ayurvedic texts, *Marma* therapy, and various Ayurvedic formulations advised for various illnesses can provide solutions to the sports persons. Sports medicine mainly deals with the different types of sports injuries and their treatment. Treatment part is further divided in to two, emergency treatment and long term treatment. Both of these have their own importance. Emergency treatment is very crucial on the field. Many a time it happens

that due to improper emergency handling, a player has to suffer for longer time duration. Long term treatment is useful for the better performance for longer time and rehabilitation. Ayurveda with its curative aspect helps in both the situations. *Abhyanga* and *Swedana* like therapeutic procedures are helpful for handling some kind of injuries like sprain and strain. On the other hand a systemic treatment of *Vata Vyadhi* is helpful in chronic type of injuries. Therefore comprehensive analytical and experimental research needs to be carried out based on various ayurvedic principles which can be helpful for the sports fraternity.

## REFERENCES

- 1.Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.94, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;276
- 2.Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.95, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;277
- 3.Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.102-115, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;278
- 4.Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter

8, verse no.116, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279

5. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.117, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279

6. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.118, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279

7. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 7, verse no.49, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;48

8. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Sutra Sthana Chapter 35, verse no. 39,40, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 156

9. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.119, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279,280

10. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.120, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279,280

11. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 8, verse no.121, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;279,280

12.Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 1, verse no.21,22, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;235,236

13. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Vimana sthana, chapter 1, verse no.21.4, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;235.

14. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 5, verse no.12, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;38

15. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 5, verse no.93,94, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;43

16. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 5, verse no.81-85 Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;42

17. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 5, verse no.86-92, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;42,43

18. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana, chapter 14, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;87-92

19. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Chikitsa sthana chapter

1.1, verse no.7-12, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;376,377

20. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Chikitsa sthana chapter 1.1, verse no.16-23, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;377

21. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Chikitsa sthana chapter 1, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;376-390

22. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana chapter 4, verse no. 8-19 Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;31-33

23. Mark Harries, Clyde Williams, William Stanish; Editors. Oxford Textbook of Sports Medicine; 2<sup>nd</sup> Edition, Oxford University Press, 2000

23. Vaidya Jadavaji Trikamji Acharya (editor). Commentary: Ayurveda Deepika of Chakrapanidatta on Charaka Samhita of Charaka, Sutra sthana chapter 4, verse no. 16 Varanasi: Chowkhambha Surbharti Prakashan;Reprint2005;34

24. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Nidana Sthana Chapter 1, verse no.27,28, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 260

25.Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Uttar Tantra Chapter 41, verse no.16,21-24, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 712,713

26. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Uttar Tantra Chapter 52, verse no.11,12, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 712,766

27. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Sharir Sthana Chapter 6, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003,369-376

28.Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Chikitsa Sthana Chapter 2, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 408-415

29. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Chikitsa Sthana Chapter 3, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 415-420

30. Vaidya Jadavaji Trikamji Acharya, Narayanram Acharya Kavyatirtha(editor). Commentary : Nibandhsangraha of Dalhanacharya on Sushrut Samhita of Sushruta, Sutra Sthana Chapter 12, Varanasi: Chowkhambha Surbharti Prakashan;Reprint2003, 50-5531.

31. Yd. Mrs. Swati Sanjay Bedekar, A critical study of gulpha marma in basket ball players with special reference to the role of Masha taila along with snehana & swedana as preventive measure, Tilak Maharashtra Vidyapeeth, 2007.

32. Pritesh Ashvinbhai Dave, A pilot study on sports medicine in ayurveda w.s.r. to Sarir bala vridhhi, IPGTRA, Jamnagar, 2007

33. G. Sendhil, Effects of resistance training with separate packages of Asanas and ayurvedic massage on selected physical fitness components and physiological variables of men adults, Tamil Nadu Physical Education and Sports University, Chennai, 2011
34. Vikas Kumar, Effect of Withania Somnifera (Ashwagandha) on the physical fitness components and

physiological variables in hockey players, Kurukshetra University, 2014

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