

## Exploring Physiotherapy in *Bala Roga*

Dr. Lovepreet<sup>1</sup>, Dr. Sunil Kumar Yadav<sup>2</sup>,  
Dr. Kalpesh Jajhoria<sup>3</sup>, Dr. Akshita Choudhary<sup>3</sup>, Dr. Akanksha Rana<sup>3</sup>

<sup>1</sup>PhD Scholar, <sup>2</sup>Associate Professor, <sup>3</sup>PG Scholar,

<sup>1,2,3</sup>Department of Rachana Sharir, National Institute of Ayurveda, deemed-to-be University, Jaipur, Rajasthan, India

### ABSTRACT

*Ayurveda* is a complete science that covers all the aspects of *Chikitsa*. *Bahirparimarjana Chikitsa* such as *Poorva* and *Paschata Karma* of *Panchkarma* therapy (*Swedana*, *Udwartana*, *Udgharshana* etc) are the physiotherapy practices in *Ayurveda*. In addition, certain individual references in *Ayurveda* classics also strongly indicate physiotherapy practices in *Bala Roga* such as use of physical agents in *Pranapratyagamana*, postural assistance during *Upveshana Sanskara* and use of 'Phakka Rath' in *Phakka Roga*.

**OBJECTIVE:** To reveal references indicating physiotherapy practices in *Bala Roga*, to provide probable scientific basis behind practicing these techniques and also to explain the purpose of these techniques according to *Ayurveda* vis-à-vis physiotherapy.

**DATA SOURCE:** *Jatisutriyashaariram* of *Charak Samhita*, *Bala-upcharniyam Adhyaya* of *Ashtangahridayam*, *Phakka Roga Chikitsa Adhyaya* of *Kashyapa Samhita*.

**REVIEW METHODS:** Relevant materials were searched from sources such as published books, journals and the internet. A critical review was done over the same.

**RESULT:** Use of physical agents in *pranapratyagamana* activates primitive reflexes of the neonates initiating a physical response generally in form of crying which results in initiation of respiration via expansion of lungs. Postural assistance during *Upveshana Sanskara* helps in supporting the spine. Use of *Phakka Rath* if child does not walk after one year of age provides external support, improves stability, help in maintaining balance while walking, activates neural facilitation and help in generating movement; thus help child learn walking.

**CONCLUSION:** The physiotherapy practices found in *Ayurveda* are scientific; and can be well explained on basis of functional/living anatomy, biomechanics, kinesiology and physiology and pathophysiology.

**KEYWORDS:** *Ayurveda*, *physiotherapy*, *Pranapratyagamana*, *Upveshana Sanskara*, *Phakka Rath*

### INTRODUCTION

Physical therapy or physiotherapy is a discipline of medicine (rehabilitation medicine) that remediates impairments, promotes mobility, improve function and build muscle strength, through physical interventions without using medicines. It uses physical agents, mechanical force, adaptive devices, exercises, traction and movements, postural training,

tapping and bandaging and external manipulations.<sup>[1]</sup> Use of physiotherapy is highly useful especially in disorders related to musculo-skeletal system, locomotor system, restricted/hampered movement and it can also serve as an alternative to the surgical interventions.

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On the other hand, *Ayurveda* an ancient science have inclusion of 18 types of *Upshaya* and different types of treatment modalities in it; all these forms of treatment are categorized into three viz. *Antahparimarjana* (drugs for internal administration), *Bahirparimarjana* (drugs for topical application and external treatment) and *Shastrapranidhana* (surgical treatment).<sup>[2]</sup>

*Bahirparimarjana* have their own beneficial effects and are extensively practiced not only for therapeutic reasons but also in routine. Certain *Bahirparimarjana Chikitsa* such as *Abhyanga*, *Poorva* and *Paschata Karma* of *Panchkarma* therapy (*Abhayanga*, *Swedana*, *Udwartana*, *Lepa*, *Udgharshana* etc) are often equated with physiotherapy.<sup>[3]</sup> In addition to these therapies, certain individual references described in *Ayurveda* classics also strongly indicate the presence of physiotherapy.

Further, physiotherapy focuses on improving restricted movement by understanding range of motion (ROM) of joints, center of gravity (COG) of body in different positions; muscle physiology etc. All this concepts which forms the base of physiotherapy are studied under living anatomy, functional anatomy, clinical anatomy, biomechanics, physiology and patho-physiology and kinesiology. So, an attempt is made to analyze and understand the anatomy and physiology behind all the references found in *Ayurveda* indicating physiotherapy practices.

### AIMS AND OBJECTIVES

The objectives of this study were as follows:

1. To collect all the scattered references indicating the existence of physiotherapy practices in *Bala Roga*.
2. To explain the scientific basis behind practicing these techniques.
3. To explain the purpose of these techniques according to *Ayurveda* vis-à-vis physiotherapy.

### DATA SOURCE

1. Review of *Ayurveda* literature including relevant commentaries.
2. Review of modern physiotherapy literature and modern [anatomical] literature for comparative study and drawing inferences and justification.
3. Other print media, journals and internet will also be searched for similar matter and will be incorporated according to the need of the topic.

**ETHICAL CLEARANCE-** Since my study is a type of literary research hence IEC clearance was not needed.

### REVIEW OF LITERATURE

After reviewing the *Ayurveda* literature related to *Bala Roga* following references were found

representing *Ayurveda* physiotherapy. These are enumerated below:

- A. In *Pranapratyagamana* of the new born baby, one should produce sound with two stones near ears of the baby, sprinkle cold/warm water on the face, and wave a black colored fan to bring baby to senses.<sup>[4]</sup> Also, *Mantra Chikitsa* is done.<sup>[5]</sup>
- B. *Upveshana Sanskara*: the child should be taught to sit on ground at 5 months of age with support and back, flanks and legs should be massaged. Also, the child should not be made to sit for too long.<sup>[6]</sup>
- C. *Acharya Kashyapa* has mentioned about '*Phakka Rath*' to be used in children who cannot walk after one year of age.<sup>[7]</sup>

### RESULT:

#### 1. USE OF PHYSICAL AGENTS IN PRANAPRATYAGAMANA

*Pranapratyagamana* is a procedure performed in newborns to bring the neonate (who is not responsive due to birth procedure) back to senses using sound, temperature and air as part of treatment.

Sound, temperature and air used here are nothing but the physical agents used in physiotherapy. Use of various physical agents such as water, sound, temperature etc. for treatment is an integral part of physiotherapy. But this concept is not new and very well explored in *Ayurveda*.

All these are methods of external stimulations to the baby to bring him/her back to senses. External stimulation initiates certain reflexes in the new born:<sup>[8]</sup>

- A. **MORO'S REFLEX:** it is an infantile reflex in which in response to sharp sound/ disturbance the neonate react by sudden movement of head, spreading out the arms (abduction) with palm up and thumb flexed, pulling the arms (flexion and adduction) and crying and startle look. Use of two stones near the ears to create sound (one of the methods used in *Pranapratyagamana*) initiates this reflex.
- B. **WITHDRAWAL REFLEX:** It is a spinal reflex intended to protect the body from damaging stimulus. The reflex rapidly coordinates the contraction of all flexors and relaxation of all the extensors causing sudden withdrawal from the stimulus. When cold/warm water is sprinkled on the newborn (temperature stimulation) it activates the temperature receptors in the skin triggering a sensory impulse/reflex and creating movement in the neonate.
- C. **BLINKING REFLEX:** it is stimulated when light is flashed or puff of air is waved directly upon

neonate's eye causing him/her to blink. Thus, waving air upon child triggers this reflex. Here, *Acharya* have emphasized on use of black colored fan. This may be because binocular and color vision at time of birth is not fully developed and neonate eyes are contrast sensitive. A newborn infant can notice the light, darkness, the moving objects or the objects in transverse backgrounds. Even if the shiny, colorful shapes are simple, infants tend to prefer more complex black and white shapes.<sup>[9]</sup>

The most common response of these reflexes of newborn is by crying. First cry of the newborn is very important in initiating the process of respiration and expansion of the lungs.

Thus, all the external means mentioned in *Pranapratyagamana*, can be seen as method of initiating the process of respiration as well as physical activity by provide external stimulation to the neonate via activating primitive reflexes of the neonates.

Also, these neonate reflexes are indicative of normal neurological as well as sensory development. Doctors/physiotherapist uses these reflexes for checking neurological/sensory development within first hour of life. Non-responsiveness to them indicates congenital disorders. This can also be a reason of performing *Pranapratyagamana*.

## 2. POSTURAL ASSISTANCE DURING UPVESHANA SANSKARA

*Upveshana Sanskara* is a practice in which the infant is made to sit on the floor for the first time while supporting the back. Also, it is said that the child should not be made to sit for long time. This is usually performed at 5 months of age but some texts mention that it should be performed in 6<sup>th</sup> month.

The support provided to the back here is important as the neurological control over posture at this age is not fully developed. The muscles do not provide complete stability to the spine and curvature of the spine is still rounded (lordosis and kyphosis not present); so, the spine by itself can't withstand the whole body weight. Also, the child should not be made to sit for too long because the process of ossification of bones is still undergoing. Bones in children are not too strong and longtime sitting may lead to postural deformities and also cause pain.

This might be the explanation why *Ayurveda* emphasis on providing support while sitting to child and also contra-indicates long sitting.

In this reference, it is clearly mentioned by the *Acharya* that providing support to the spine of the child is important. Physiotherapy also focuses on

maintenance of correct postural and various methods of external assistance are described for this purpose in a branch this science known as assistance training. Hence, this reference is also indicative of knowledge of physiotherapy in *Ayurveda*.

Further, when we study the gross motor development in infants, it is written in modern texts that by the age of 5 months, the child can sit steadily with support of pillows or the therapists' hands. At first the back is rounded but gradually it straightens. He/she independently sits with his/her arms forward for support (tripod or truly 'sitting with support') by the age of 6-7 months.<sup>[10]</sup>

So, the knowledge of motor development of modern science is in accordance with the knowledge in *Ayurveda*.

## 3. THERAPEUTIC EXERCISE AND ASSISTANCE TRAINING IN PHAKKA ROGA VIA USE OF 'PHAKKA RATH' IF CHILD DOES NOT WALK AFTER 1 YEAR OF AGE

Gross motor development indicates that normally a child is able to stand/walk at age of 9 months.<sup>[11]</sup> But in *Phakka Vyadhi* child is unable to walk even after he/she has reached 1 year of age. Detailed study of this *Vyadhi* suggests that it can be due to malnutrition (*Shiraja or Garbhaja Phakka*) or any neuro-muscular disorder (*Vyadhij Phakka*).

In both the causes, the muscular system becomes weak and is unable to withstand the body weight and maintain balance. So, the child is unable to walk.

In such case, to maintain muscle activity it is important to perform some regular physical activity before complete muscular dystrophy arises due to inactivity. But because child is unable to walk on his/her own, '*Tri-Chakra Phakka Rath*' (walker with three limbs) are used for walking.

Using tripod walker in this case will provide external support, improves stability, reduces lower limb loading, help in maintaining balance while walking and also help in generating movement (by substituting muscles and joints of the spine, pelvis and/or legs in generation of dynamic forces during walking).

Here, use of *Phakka Rath*, mentioned by *Acharya Kashyapa* clearly indicates that how knowledge of two of the major physiotherapy practices - therapeutic exercises and assistance training is in-cooperated in *Ayurveda*.

Here, it is interesting to note that *Acharya Kashyapa* have mentioned using routine walking for therapeutic exercising instead of any other exercise. This is

similar to the principle of Task specific functional training used by physiotherapists where using routine activity for therapeutic exercising provides additional benefits. Repeated exercising results in development of new signals in brain which are then stored in memory for future use, a process called neural facilitation. This process can also get activated by making the child walk regularly as seen above. In course of time the child learns walking without support.

This might be the possible reason why *Acharya Kashyapa* have mentioned use of *Tri-Chakra Rath* in *Phakka Chikitsa*.

## CONCLUSION

References collected from *Ayurveda* classics suggest that *Ayurveda* classics covers the knowledge of all the aspects of physiotherapy. Methodology of *Pranapratyagamana*, *Upveshana Sanskara* and use of *Phakka Rath* in *Phakka Roga* clearly indicates presence of knowledge of physical agents, body positioning/postural training and therapeutic exercises and assistance training in *Bala Roga* respectively.

Use of physical agents in *pranapratyagamana* activates primitive reflexes of the neonates which initiates physical response usually in form of crying resulting in expansion of lungs and initiation of process of respiration. Postural assistance during *Upveshana Sanskara* helps in supporting the spine. Use of '*Phakka Rath*' if child does not walk after 1 year of age provides external support, improves stability, reduces lower limb loading, help in maintaining balance while walking and help in generating movement. It also, activates neural facilitation; thus help child learn walking. Hence, the references related to physiotherapy found in *Ayurveda* are scientific; and can be well explained on basis of functional/living anatomy, biomechanics, kinesiology and physiology and patho-physiology.

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