

## A CRITICAL REVIEW OF CLINICAL APPLICATION OF YOGASANAS W.S.R. TO PAVANAMUKTASANA

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### ABSTRACT

**Objective-** Stress is the outcome of every days overcomplicated lifestyle and lack of physical and spiritual support. After exhausted review of different literature, in regard to *yogasana* and *pawanmuktasana*, we found that according to *hathyoga* *yogasana* is first step of *yoga*. *Yogasana* improve every aspect of life by counteracting stress through HPA axis and SNS down regulation. The purpose of this article is to provide a scholarly review of the literature regarding research studies for the effects of *yogasana* on a variety of health outcomes and health conditions. **Method-** Using different research database with the key word “*yogasana*” and “*pawanmuktasana*” a comprehensive search of the research literature from core scientific and nursing journals yielded studies that met inclusion criteria. These studies were included in this review. *Yogasana* searched through ancient literature and yoga literature fulfilled the aim of this article. **Result-**In the studies reviewed *Pawanmuktasana* is one of 84 *asanas* wordly described as air freeing exercise. Air means *Vata* which is the only motivating factor for all *tridosha* and inducing factor for all diseases according to *Ayurveda*. *Pawanmuktasana* remove *Vata* and act on all the system positively with proper breathing sequence it flow *pranik energy* with in *kundalini* and person can achieve extreme spiritual happiness. **Conclusion-**The studies comparing the effects of *yogasana* seems to indicate that, in both healthy and diseased populations, *yogasana* may be as effective as exercise or better at improving a variety of health-related outcome measures. *Pawanmuktasana* is a dynamic series of *asanas*, which is extremely beneficial in number of systemic pathology in human body. Future clinical trials are needed to examine the definite mechanism of action particularly how these modalities may differ in their effects from exercise. **Key-words-** *Yogasana, Pawanmuktasana, Kundalini, Vata*.

### INTRODUCTION

*Asanas* are described as “*sthira sukham asanas*”<sup>1</sup> that means stable, comfortable state of body. *Asanas* are the “subtle exercises” that release physical and mental energy blockages and tone the body-mind for deeper practices<sup>3</sup>. *Ayurveda* mainly comprises with mind body balance which is the

main key of being healthy. Yoga is main part of it and helps in coordinating mind with body; yoga put multidimensional being into a state of reintegration that originally creates the feeling of wholeness<sup>6</sup>.

#### *Yogasana*

*Patanjali* *yoga* have mentioned eight

branches –*yama, niyama, asana, pranayama, pratyahara, dharna, dhyan, Samadhi* so asana is third limb<sup>1</sup>, while “*Hatha yoga*” given “*asana*” first place giving physical relaxation and steadiness most importance, in the way to reach extreme happiness. “*Ha*” means sun indicates energy of solar plexus, “*Tha*” means moon indicates energy of the emotions, located in the limbic system of brain and energy of both system come together in this system of *yoga*.<sup>2</sup>

### **Yogasana and exercise**

*Yogasana* and exercise both are part of that process of the development of good physical health by stretching, massaging, without it the muscles waste, the bones become weak, the capacity to absorb oxygen decreases, insulin insensitivity can occur, and the ability to meet the physical demands of sudden activity is lost. Among them *yogasana* also stimulate the *pranic* channels and internal organs, so *asanas* are complementary to exercise. In addition, *asanas* are designed to have specific effects on the glands and internal organs, and to alter electrochemical activity in the nervous system.<sup>6</sup>

*Asanas* are different from other exercises as yogic posture are synchronous posture requiring minimum energy consumption and maximum rehabilitate effect on physiological organs and system and cultivate awareness, relaxation, concentration and meditation. This leads to an enhancement of physiological efficiency without undue muscular development alone, while in simple physical exercise is beneficial stress on the body cause vigorous unstable muscular action so the disproportionate loss of energy, in brief it cause maximum energy consumption, minimum rehabilitative effect on phy-

siology and only skeletal muscle effected. In the *yogasana* process respiration and metabolic rate slow down, consumption of oxygen drop and body temperature decrease that's why *yogasana* tend to arrest catabolism whereas exercise promotes it. So this takes some time to achieve beneficial stage of yoga when it is practices in right posture and right sequence of breathing.<sup>3,6</sup>

*Asanas* posture flows, *vinyasas*, (movement/ position of limbs/ attitude- by Kavyad) explain the word) strengthen your mind by developing continuity of awareness of breath. This in turn develops your capacity to sustain effort without producing stress.

### **Generalised effect of *yogasana*-**

Main benefit of *asana* is when this relaxation of effort and steadiness of body created, the resulting pleasurable sensation pervades all level of psychology, physiology and consciousness. These *asanas*, if done correctly, in a non-competitive and relaxed atmosphere, not only relax the muscles of the body, but these relaxing impulses travel back to the brain and relax the mind. By integrating the breath synchronization and awareness, the attentive faculty of the mind is made active and is not allowed to wander into tension and stress. The nature of these *asanas* is thus more mental than physical. If *asanas* are performed correctly they relax the mind, tune up the autonomic nerves, hormonal functions and the activities of internal organs. These are benefits that make yoga unique.

Stress is outcome of today's over-complicated lifestyle and inducing cause of all diseases. All these factors are compensated and counteracted by *yogasana* practices. There some article collected in this refer-

ence dignifies this concept.

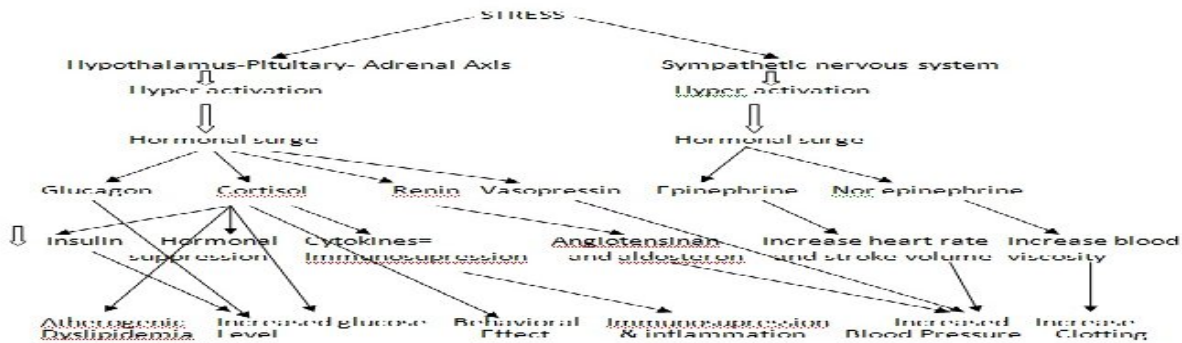


Figure showing Impact of stress inducing diseases through various factor, yogasana shown significant effect on all these factor through different mechanism.

This benefit is common to all *asanas* utilized

benefit. The general benefits create mental equilibrium, emotional health, calmness, sensitivity to yourself and others and prepare the mind for meditative introspection. With this understanding the early *acharyas* of *yoga* advocated the mastery of one asana. Secondary benefit is from practice of *asanas* that related to specific movements of the body and how positively they affect physiology, this secondary effect are important from a health and curative point of view.

*Pawanamuktasana* is series of the asana gives very much therapeutic effect in all the

gastric trouble and also mobilize all the major joints. *Swami Satyananda* considered them to be the very foundation of asana, “subtle exercises” that release physical and mental energy blockages and tone the body-mind for deeper practices. Exercise stimulates the SNS, raising plasma epinephrine and nor epinephrine.<sup>25,26</sup> Yoga on the other hand, has been shown to lower sympathetic stimulation, significantly lowering levels of plasma nor epinephrine and epinephrine.<sup>9</sup> improving perceptions of mood and anxiety.<sup>27,28</sup> Yoga interventions in alleviating symptoms and improving outcomes of patients with coronary artery disease,<sup>29,30</sup>

Stress induced disease producing factor		Counteracting mechanism of yogasana
Hyperactive HPA axis		1) down-regulation of the hypothalamic– pituitary–adrenal (HPA) axis and the sympathetic nervous system (SNS) <sup>32</sup>
Atherogenic dyslipidemia		1) yoga subjects experienced significantly lower levels of triglycerides and low density lipoprotein cholesterol, in addition to lower body weight <sup>34</sup>

Increased glucose level	<ol style="list-style-type: none"> <li>1) <math>\beta</math> cell stimulation increase insulin level so decrease glucose level.<sup>16</sup></li> <li>2) increase utilization and metabolism of glucose in peripheral tissues, liver, and adipose tissues through enzymatic process<sup>34</sup></li> </ol>
Behavioral effect	<ol style="list-style-type: none"> <li>1) lowering levels of plasma nor epinephrine and epinephrine, improving perceptions of mood and anxiety<sup>9</sup></li> </ol>
Immunosuppressant/Inflammation	<ol style="list-style-type: none"> <li>1) alleviate blood flow throughout body, improve metabolism and increase immune response<sup>35</sup></li> <li>2) Decrease oxidative stress by significant improvements in BMI, FPG, PPPG, HbA<sub>1c</sub>, malondialdehyde, glutathione, and vitamin C<sup>33</sup></li> </ol>
Enhanced sympathetic nervous system response	<ol style="list-style-type: none"> <li>1) down-regulation of the hypothalamic– pituitary–adrenal (HPA) axis and the sympathetic nervous system (SNS)<sup>32</sup></li> <li>2) <i>Yogasana</i> shown to lower sympathetic stimulation, significantly lowering levels of plasma nor epinephrine and epinephrine<sup>24</sup></li> </ol>
Increased blood pressure	<ol style="list-style-type: none"> <li>1) Forward bending <i>asanas</i> directly decrease blood pressure<sup>9,19</sup></li> </ol>

### Biochemical changes and their effects on body through *asanas*

The practice of yoga specifically rehabilitates the physiological organ and endocrine gland. A sustained evidence of increased production and breakdown of adrenocortical hormone in the volunteer undergoing yoga practice is found in most significant observation. This increased adrenocortical activity inhibit protein breakdown so restore serum protein (show compatibility of increased ACTH activity), decreased serum cholesterol, and decreased fasting blood sugar. Increased adrenocortical activity also make subject competent for resisting more stress and also inhibit stress by inhibiting instantaneous metabolic and endocrinal change. These improved physiological, endocrinal and metabolic sequence seen in these subjects. Simultaneously these practices induce a neurohumoral balance and improved psychic function. All these changes are probably induced basically by improving

the microcirculation in vital organs and endocrine glands thus leading increased functional efficiency and in turn improved metabolic sequence.

### *Pavanamuktasana*

As the name suggest *pavan*-air, *mukta*-release, *asana*-pose it regulate and release unwanted *vayu* (air) from whole body especially gastrointestinal tract and joints. Our bodies are composed of blood, flesh, bones, marrow, water, wind, electricity, etc., and when we practice the *pawanmuktasana* series of exercises, we are definitely affecting these components of the body. However, *the pawanmuktasana* exercises are not only meant for the physical body. Of course we perform these exercises through the physical body and many of us practice *pawanmuktasana* to maintain or restore our physical health, but as well as inducing positive effects in the physical body, our psychic centers are also influenced. *Ayurvedic* term *vata*, we can understand its meaning better and

get a complete idea of how this series of asanas works.

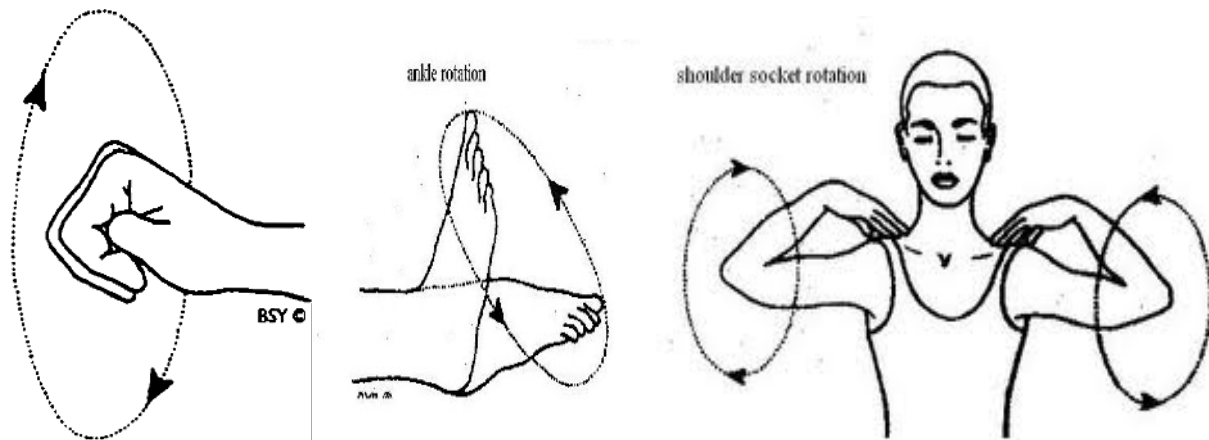
*Vata* is one of the three humors or *tridosha* in *Ayurvedic* system of medicine. These humors originated from the different elements and they constitute the basis of human existence and our bio-psycho-social environment. *Vata* can be translated as 'that which moves things'. It is comprised of the ether and air elements and it is related to the energy or life-force. *Vata* is the motivator of the three humors and is considered to be the principle of movement or air principle. Its main site is in the large intestine<sup>2,3</sup>

**Pawanamuktasana -Review in different tradition-**

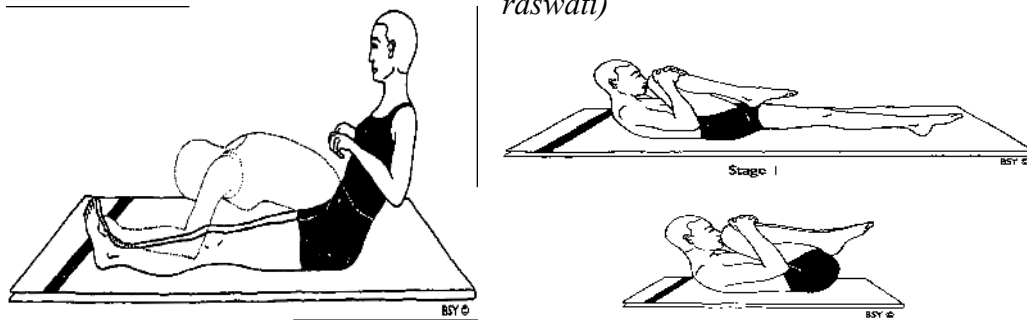
*Pawanamuktasana* is described among 84 *asanas* by all yoga literature (*Hath yoga pradipika, Patanjali yoga sutra, Ghe-*

*randa samhita, Goraksha samhita* etc) but not many scripture described *Pawanmuktasana* in detail.

In *Asana Pranayama Mudra Bandha* by *Swami Satyanand Saraswati* described 3 type of *pawanmuktasana*, 1<sup>st</sup> *pawanmuktasana* for joints, 2<sup>nd</sup> type for digestive system known as *supta pawanamuktasana* and *jhulana pawanmuktasana*, 3<sup>rd</sup> type for improving the energy flow within the body and breaking down neuro-muscular knots known as *Shakti Bandhasana*..<sup>3</sup>



(Type 1 Pawanmuktasana for joints -Asana Pranayama Mudra Bandha by Swami Satyanand Saraswati)



(Type 3 Pawanmuktasana – Shakti bandh  
-asana – Asana Pranayama Mudra Bandha  
by Swami Satyanand Saraswati)

In Krishnamacharya tradition *pawanamuktasana* is called as “*apanasana*”. *Apanavayu*- a downward moving inner energetic wind of body so pose is associated with anything need to exit from body from perineum, including waste from gastro intestinal tract.

Some modern yoga practitioner also termed *pawanamuktasana* as joint freeing asana. This asana is dynamic series for purpose of limbering the joint, evaluating normal range of motion learning musculoskeletal anatomy, with regular practice freeing subtle energy flow called *nadis* to permit to the experience of meditation.

On regular practice asana stimulate “*manipura chakra*”. As the *adhithana* of this *chakra nabhi* and peripheral anatomical structure related to it, are main pressing points by this *asana* and this *chakra* is *sthana of agni* which regulate all the gastro intestinal functioning. Observation by many researchers proved this asana to be effective in constipation, flatulence and other gastrointestinal trouble.

#### **Effect of Pawanmuktasana on cardiovascular system**

*Pawanmuktasana* is a forward bending asana and forward bending produce sedative effect also forward bending cause decrease in blood pressure. Except that *pawanmuktasana* stimulate stretching and lengthening reflex on abdominal muscle which cause sudden rush of blood flow in abdominal aorta and its tributaries and provide better perfusion of nutrition and oxygen

(Type 2 Pawanmuktasana – Supta pawanmukt  
asana -Asana Pranayama Mudra Bandha  
by Swami Satyanand Saraswati)

in GIT and so the various joints. Besides this, with the practice of *pawanmuktasana*, the legs are brought higher than the heart level, making the hydrostatic pressure work in favor of the blood flow towards the heart.<sup>29,30,31</sup>

Now a day’s many customs of yoga are seen as *Patanjali yoga*, *Hath yoga*, *Kundilini jagran yoga*, *Iyenger yoga*, *Krishnamacharya yoga* etc. These different streams somehow have the same aim to achieve extreme spiritual and psychosomatic wellbeing.

#### **Effect of Pawanamuktasana on digestive system**

Various *asanas* massages the abdomen and the digestive organs and is therefore very effective in increasing peristaltic movement, regulate functioning of abdominal endocrine viscera, removing wind and constipation. By massaging the pelvic muscles and reproductive organs this asana regulate tone of pelvic viscera. By increasing peristaltic movement this asana is specially suggested in patients with IBS and flatulence.<sup>3,8</sup>

#### **Effect of Pawanamuktasana on endocrine system**

This asana type2 is specially beneficial in digestive system related disease and type 2 diabetes mellitus because this asana directly affect abdominal viscera through these mechanism (a) Rejuvenation/regeneration of cells of pancreas due to abdominal stretching during yoga exercise, which may increase utilization and metabol-

ism of glucose in peripheral tissues, liver, and adipose tissues through enzymatic process.<sup>10,11</sup> (b) More active practices followed by relaxing ones lead to deeper relaxation than relaxing practices alone, documented by research from Swami Vivekananda yoga research foundation near Bangalore city and possibility of neuroplasticity bringing about changes in the hypothalamic–pancreatic axis.<sup>12</sup> (d) The improvement in the lipid levels after yoga could be due to increased hepatic lipase and lipoprotein lipase at cellular level, which affects the metabolism of lipoprotein and thus increase uptake of triglycerides by adipose tissues.<sup>14,15</sup>

Yoga postures can lead to improvement in the sensitivity of the b-Cells of the pancreas to the glucose signal and also the improvement in insulin sensitivity in turn can be due to the cumulative effect of performing the postures.<sup>16</sup>

Direct stimulation of the pancreas by the postures can rejuvenate its capacity to produce insulin.<sup>17</sup> Regeneration of pancreatic beta cells could occur by yoga exercises that promote blood circulation in the region of the pancreas and yoga *asanas* that stimulate the meridian of pancreas also could assist in some diabetic patients.<sup>18</sup>

### **Effect of Pawanmuktasana on musculoskeletal system**

The muscle activity is very complex. Therefore, in this paper, we will emphasize the effects of PMA on two important reflexes: the stretch reflex and the lengthening reflex, the tone of the muscle and its relation with physical tension.

Muscular relaxation, development and improved blood supply to muscles

might enhance insulin receptor expression on muscles causing increased glucose uptake by muscles and thus reducing blood sugar<sup>16</sup>

The first part of the *pawanmuktasana* series or anti-rheumatic exercises<sup>3</sup>, we can see how a great many muscles are used and stimulated in a very systematic and relaxed way. There is minimum contraction (without tension) to tone up the lengthening reflex, and when a group of muscles is contracting, the antagonists are stretching to stimulate the stretching reflexes. There is also maximum stretching to develop flexibility which affects the tone of the muscles, bringing them to the lowest possible state of contraction and, in this way, releasing physical tension that is reflected in a very high muscular tone. *Pawanmuktasana* series the joints are mobilized safely to stimulate the circulation of synovial fluid, its secretion and absorption. This improves the process of lubrication and, at the same time, revitalizes the tissues, improving nutrition and elimination of waste products and protecting them from degenerative changes due to normal or abnormal activity.<sup>36</sup>

### **Effect of Pawanmuktasana on lymphatic system**

The lymphatic channels also have valves that prevent the lymph from flowing downwards, following the hydrostatic pressure. There is also an intrinsic lymphatic pump due to the presence of smooth muscle cells, but this intrinsic pump is helped very much by the extrinsic pump which is made by contraction of the muscles, movement of the parts of the body and compression of the tissues and arterial pulsation<sup>20</sup>, All these factors that form the extrinsic lymphatic

pump are stimulated through regular practice of *pawanmuktasana*.<sup>36</sup>

### **Effect of *Pawanmuktasana* on Central nervous system**

*Pawanmuktasana* like forward bend usually have soothing effect on nervous system and calm & quieting the mind. Meditative portion of this *asana* increase the concentration and increase blood supply to the brain. In the localized effect of this *asana* produce stimulus to the pressure receptor on the abdominal muscles and organs which sends impulse to the autonomic ganglion in the region i.e. celiac ganglion, superior and inferior mesenteric ganglion, other autonomic plexus of organs. These stimuli further produce parasympathetic response as increase blood supply and regulation of tone of various organ.<sup>21</sup>

### **Relation of *pawanmuktasana* with *Prana* and *Chakra***

In the *yogic* system, *pawan* is also related to *prana*, as *prana* is defined as air. In *Ayurveda* sometimes the concept of *vata* and *prana* are used synonymously, although this is not absolutely correct. If we understand *prana* as the life-force or vitality<sup>22</sup>, we can say that *pawan* represents this energy principle. Then *pawanmuktasana* can be defined as the postures that liberate the life-force or vitality. We can also understand from this point of view how through the practice of this series of *asanas* a very powerful healing force is set forth.

Part II of the *pawanamuktasana* series<sup>3</sup> has a direct influence on *apana vayu*. Its effect is very strong on the lower abdominal muscles, pelvic organs and large intestine, which is also the site of *vata*. Blood irrigation is increased through the stimula-

tion of the venous return from the legs, increasing also the process of elimination. *Apana* is said to be the power of disease inherent in the body, the force of devolution and limitation of consciousness. So by purifying *apana vayu*, the body is protected from the forces of degeneration<sup>22,4</sup>.

*Apana* is also said to be the support and control of all the other forms of *vata*, and *vata* is said to be the root of the other two humors<sup>4</sup>. So through purification of *apana*, an overall effect is produced in the rest of the *pranas* and this reflects in the humours or *tridosha* (*Vata*-gaseous content, *Pitta*- metabolic energy, *Kapha*- water, mucus etc)-The aspect of energy, air, and water must be mentioned) which constitute the basis of human existence in the manifest world. This is also responsible for the powerful healing effect of *pawanmuktasana*.

The *pranas* are transmitted throughout the body by the *nadis* which are defined as channels or pathways of *pranic* current. These energy channels make a complex network of 'energy threads' that hold together the energy field of the human body<sup>23</sup>.

This *asana* influence a number of energy centers and vital organs at the same time, although the most important one is *Manipura chakra* (*Naval/ solar chakra*). The concept of *Cakras* is not generally considered part of the acupuncture paradigm. Yet like the acupuncture points of Chinese medicine, the *Cakras* are energy nodes with specific functions and correlations. *Cakra* points can be integrated into specific meridian circuits, used as focusing points in a resonating triangle balance, utilized to facilitate Qi movement in the CV-GV circuit, incorporated into Zang-Fu tonification proto-



cols, or used simply as Ah Shi or trigger points<sup>37</sup>.

This *chakra* anatomically related to the pan-

creas, adrenal gland, kidney and celiac plexus and their tributaries.<sup>21</sup>



(Dr Michael Greenwood is Medical Director of the Victoria Pain Clinic, a residential facility in Victoria, British Columbia, Canada PAGE 32 | MEDICAL ACUPUNCTURE | VOLUME SEVENTEEN / NUMBER THREE / 2006)

### **Pavanamuktasana-in modern research view-**

Some modern researcher also acknowledged that these *asana* shown its effect on specific diseases. Department of physiology, Guru Tegbahadur Hospital college and university of medical sciences New Delhi research shown effect of asana and pranayama on type 2 diabetes mellitus-just after *asanas* fasting and post prandial blood sugar level is decreased significantly. Researcher applied 13 *asanas* and *pranayama* on type 2 NIDDM diabetes mellitus patients i.e. *padmasana*, *paschhimottanasana*, *pavanamuktasana*, *bhastrika pranayama*, etc and seen that after yoga practice fasting blood sugar decreased from 208 to 171±13 and post prandial blood sugar from 295 to 269±20. They formulated that exact mechanism of how these posture and controlled breathing interact with somatoendocrine mechanism affecting insulin kinetics worked out on glucose utilization and fat redistribution in NIDDM. *Yogasana* used as adjuvant with diet and drug management of type 2 diabetes mellitus. A significant decrease in waist hip ratio and change in insulin level

were also observed suggesting positive effect of *yogasana*. *Yogasana* used as adjuvant with diet and drug management of type 2 diabetesmellitus.<sup>9</sup>

Another research by department of physiology, AIIMS stated beneficial effect of *asanas* in diarrhea dominant IBS. They applied various *asanas* on patients for 2 month i.e. *vajrasana*, *pavanamuktasana*, *paschimottanasana* along with *suryanadi pranayama* twice daily and seen in result that significant decrease in bowel symptom and anxiety. This was accompanied by an increase in electrophysiological recorded gastric activity in the convention and also shows increased parasympathetic activity as heart rate parameter.<sup>8</sup>

### **CONCLUSION**

*Pawanmuktasana* is a complete asana which not only fulfill materialistic requirements of human body but also enrich the spiritual level. Many research articles described this with dignifying its effect on various diseases too. These beneficial effects are particular with specific *asanas* utilized with concentrated glottal breathing. It was with this understanding that the early writers of yoga advocated the mastery of one asana. Further researches are needed to understand

exact mechanism of these *asanas*.

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