

BACKWARD BENDING ASANAS AND THEIR EFFECT ON BMI AND WHR REDUCTION

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ABSTRACT

This article discusses the effects of backward bending asanas on Body Mass Index (BMI) and Waist-to-Hip Ratio (WHR) reduction. Backward bending asanas, a prominent feature of yoga practice, consist of postures that facilitate spinal flexibility, open up the chest, and stimulate core activation. These asanas are postulated to stimulate metabolism, enhance blood circulation, and aid fat burning, thus helping reduce BMI and WHR, both critical markers of body composition and well-being. The present review analyzes the literature and clinical trials on the studies that have looked into the physiological effects of backward bending asanas on fat distribution, muscle tone, and metabolic rate. Findings indicate that consistent practice of these asanas can result in significant decreases in BMI and WHR, particularly when accompanied by a healthy diet and other types of physical exercise. The article concludes that backward bending asanas can be an effective tool for weight control and body composition enhancement, especially within the context of holistic wellness programs.

KEYWORDS: Asanas, BMI, WHR, Obesity.

INTRODUCTION

Since the *Vedic period*, a healthy and long life has been highly valued. The body must be well-maintained, as good health is essential for overall well-being. *Acharya Charaka* described a person with a balanced proportion of muscles, a compact and firm body, and strong sense organs as being resilient to various disorders. Such individuals can withstand hunger, thirst, heat, cold, and physical exertion. Their digestion, food assimilation, and muscle metabolism are in a state of equilibrium, contributing to their overall health and vitality.

However, nowadays, most people do not have a balanced body composition. Overweight and obesity have become common issues in the modern era. Obesity is a chronic disease that is widespread and poses significant risks for developing conditions such as diabetes mellitus, hypertension, cardiovascular diseases, musculoskeletal disorders (especially osteoarthritis), and certain types of cancer.

According to the World Health Organization (WHO) in 2008, more than 1.4 billion adults aged 20 and older were overweight. Among these, over 200 million men and nearly 300 million women were classified as obese. In that year.

35% of adults aged 20 and over were overweight, and 11% were obese. By 2011, more than 40 million children under the age of five were also overweight. Overall, more than one in ten of the world's adult population was obese, with women being more likely to be obese than men.

Obesity has reached epidemic proportions, yet the majority of people are still unaware of the factors that contribute to this issue and the consequences it brings.

At least 2.6 million people die each year due to being overweight or obese.

According to the World Health Organization (WHO), overweight and obesity are the fifth leading risk factors for global deaths.

Sthoulya refers to the abnormal and excessive accumulation of *Meda Dhatu* (fat tissue). In contemporary medical science, it is comparable to obesity and is defined as an excess of body and visceral fat that poses a health risk.

According to *Acharya Charaka*, in individuals with excessive fat, other *Dhatus* (tissues) do not develop to the same extent. In today's fast-paced lifestyle, improper eating habits and relatively little exercise are major contributors to obesity.

Backward bending asanas open up the chest, improve lung capacity, and enhance spinal flexibility. They stimulate the digestive and endocrine systems, making them beneficial for obesity management.

AIM

To evaluate the BMI and WHR reduction effect of backward bending asana and compare in the management of obesity.

MATERIALS AND METHODS: A clinical trial was conducted on 30 participants. The backward bending asana group practiced

- Ardhashakrasana
- Ustrasana
- Makarasana
- Bhujangasana
- Shalabhasana Each asana was performed for 10-15 seconds per round, with five rounds daily over 90 days.

1. ARDHACHAKRASANA^[1]

Steps of *Ardhashakrasana*:

- Stand straight with feet together and arms alongside the body.
- Balance your weight equally on both feet.
- Breathing in, extend your arms overhead, palms facing each other.
- Breathing out, gently bend backwards pushing the pelvis forward, keeping the arms in line with the ears, elbows and knees straight, head up and lifting your chest towards the ceiling
- Hold, breathing in come back up.
- Breathing out, bring the arm down and relax.

Benefits^[2]

1. Increases flexibility of backbone.
2. Strengthen the muscles of upper back and lower back.

3. Beneficial in backache, sciatica, and asthma.
4. Beneficial in stress anxiety and depression.

2. *USHTRASANA* (camel pose)^[3]

अध्यास्य शैते पदयुग्मव्यस्तं, पृष्ठे निधायापि धृतं कराभ्याम् ।

आकुञ्च्य सम्यग्धुदरास्यगाढं, उष्ट्रं च पीठं यतयो वदन्ति ॥

Lie prone (face downwards). Bend both the legs and cross them behind the back. Hold the feet with the hands and squeeze the mouth and abdomen firmly. This is called *ushtrasana*.

Ushtrasana as described by Sage *Gheranda* has the feet held by the hands behind the back in the prone position. It would be like *dhanurasana* except that he has the feet crossed so that the left foot is held in the right hand and the right foot is held by the left hand. He also says to contract the mouth. This is different from the practice prevalent today, which is performed standing on the knees with the face relaxed. The technique is now normally taught as follows.

Technique: Sit in *vajrasana*. Stand on the knees with the arms at the sides. The shins remain on the floor. The knees and feet may be together or separated if this is more comfortable. Lean backward, slowly reaching for the right heel with the right hand, and then the left heel with the left hand.

The heels can be separated up to a waist width apart if this is more comfortable. The thighs should be as straight as possible. The body is kept straight from the knees to the waist and the body above the waist arches backward. To assume this posture correctly the hips are pushed forward and the head and back are tilted backward as far as is comfortable. Relax the whole body, particularly the spine and back muscles. The weight of the body should be evenly supported by the arms and legs. The arms support the shoulders to maintain the arch of the back.

Remain in the final position for as long as is comfortable. Return to the starting position by slowly releasing the hands from the heels one at a time and placing them on the lower back for support before straightening the body, neck and head. While practising *ushtrasana* the body assumes the shape of a camel's hump.

Variation: Once the basic practice described above can be performed without strain, it can be done holding the right heel with the left hand. This means there is a twist incorporated into the asana along with the backward bend. Then practise on the other side, holding the left heel with the right hand.

Breathing: Breathe normally in the final position. Do not try to breathe deeply because the chest is already stretched.

Duration: Practise up to three times as a dynamic asana. Hold the final position for up to three minutes as a static pose.

Awareness: Physical awareness should be directed to the abdomen, throat, spine or natural breathing. For spiritual purposes, concentrate on swadhisthana or vishuddh chakra.

Sequence: it is important that this asana is followed by a forward bending asana, such as paschimottanasana, to release any tension in the back. The most convenient counterpose is shashankasana since it may be performed immediately from vajrasana without unnecessary movement of the body.

Precautions: When the head is tilted backward while holding the breath, the pressure of the blood may increase in the brain and cause giddiness. It is advisable to keep the head straight if giddiness is felt while doing this asana, otherwise the head should be tilted backward slowly.

Contra-indications: People who feel giddy when looking down from a high place, and those suffering from high blood pressure should not practise this asana. People with severe back ailments such as lumbago should not attempt it without expert guidance. Those suffering from an enlarged thyroid should also take care.

Benefits: This asana is beneficial for the digestive and reproductive systems. It stretches the stomach and intestines, alleviating constipation. The backward bend loosens up the vertebrae and stimulates the spinal nerves, relieving backache, lumbago, rounded back and drooping shoulders. The front of the neck is fully stretched, toning the organs in this region and regulating the thyroid gland. It is helpful for people suffering from asthma.

3. MAKARASANA (crocodile pose)^[4]

अध्यास्य शेते हृदयं निधाय, भूमौ च पादौ प्रसार्यमाणौ ।

शिरश्च धृत्वा करदण्डयुग्मे, देहाग्निकारं मकरासनं तत् ॥

Lie with the chest on the ground and the legs spread out and hold the head in the arms. This asana, which activates fire of the body, is called *makarasana*.

Sage *Gheranda* says the chest should be touching the earth and, *paadau prasaaryamaanaau*, the legs should be kept separated. Today the practice of *makarasana* is normally done with the legs kept together or slightly separated and the chest raised as follows.

Technique Lie flat on the stomach. Raise the head and shoulders and rest the chin in the palms of the hands with the elbows on the floor. Keep the elbows together for a more pronounced arch to the spine. Separate the elbows slightly to relieve excess pressure on the neck.

In *makarasana* the effect is felt at two points: the neck and the lower back. If the elbows are too far in front tension will be felt in the neck. If they are drawn too close to the chest, tension will be felt more in the lower back. Adjust the position of the elbows so that these two points are equally balanced. Relax the whole body and close the eyes.

Breathing: Natural and rhythmic.

Duration: This *asana* may be practised for as long as is comfortable.

Awareness: Count the breaths with concentration on the lower back.

People with back or spinal complaints may practise moving the awareness up along the spine from the tailbone to the neck with inhalation and back down with exhalation. Imagine that the breath is moving up and down the spine, like mercury in a glass tube. This will quickly activate the healing energies in this area. For lower back pain due to tension, concentrate on this area and feel it expanding and relaxing with every inhalation and exhalation.

For spiritual purposes, concentrate on *manipura chakra*.

Contra-indications: People with back conditions, such as exaggerated lumbar curve, should not practise this asana if any pain is experienced.

Benefits: *Makarasana* expands the chest and lungs. Asthmatics and people who have any other lung ailments should practise this simple asana regularly with breath awareness as it allows more air to enter the lungs, and helps to clear accumulated kapha or phlegm from the throat.

This *asana* is very effective for people suffering from slipped disc, sciatica, and certain types of lower back pain. They should remain in this asana for extended periods of time as it encourages the vertebral column to resume its normal shape and relieves compression of the spinal nerves.

4. BHUJANGASANA (cobra pose)^[5]

अङ्गुष्ठनाभिपर्यन्तमधोभूमौ च विन्यसेत् ।

धरां करतलाभ्यां धृत्वोर्ध्वशीर्षं फणीव हि ॥

देहाग्निर्वर्द्धते नित्यं सर्वरोगविनाशनम् ।

जागर्ति भुजङ्गीदेवी भुजङ्गासनसाधनात् ॥

Keep the body from the toes to the navel on the floor and placing the palms of the hands also firmly on the floor, raise the head like a snake. This is called *bhujangasana*. The fire of the body increases, all diseases are destroyed and *kundalini shakti* is awakened by the practice of *bhujangasana*.

Technique: Lie flat on the stomach with the legs straight, feet together and the soles of the feet uppermost and relaxed. Place the palms of the hands flat on the floor, below and slightly to the side of the shoulders, with the fingers together and pointing forward. The arms should be positioned so that the elbows point backward and are close to the sides of the body. Rest the forehead on the floor and close the eyes.

Slowly raise the upper part of the trunk of the body, keeping the navel region on the floor. The lower portion of the body from the toes to the navel remains in a relaxed state. The head is slowly raised like the hood of a snake. Be aware of using the neck muscles first while starting to raise the head, and then the back muscles to raise the trunk. Then use the arm

muscles to raise the trunk further and arch the back. Gently tilt the head backward so that the chin points forward and the back of the neck is compressed.

In the final position, the pubic bone remains in contact with the floor and the navel touches the floor or is raised a maximum of 3 cm. If the navel is raised too high, the bend tends to be in the knees and not in the back. The arms may or may not be straight; this will depend on the flexibility of the back. Hold the final position for as long as is comfortable. To return to the starting position, slowly release the upper back by bending the arms, and lower the navel, chest, shoulders and finally the forehead to the floor. Relax the lower back muscles. This is one round.

Breathing: Inhale while raising the torso. Breathe normally in the final position or retain the breath if the pose is held for a short time. Exhale while lowering the torso.

Duration: Practise up to five rounds, gradually increasing the length of time in the final position.

Sequence: This asana gives maximum benefits if practised in conjunction with *shalabhasana* and *dhanurasana* for effective general health of the back and the spine. However, as all three are backward bends, a strong forward bend such as *paschimottanasana* needs to be incorporated in the sequence.

Contra-indications: People suffering from peptic ulcer, hernia, intestinal tuberculosis or hyperthyroidism should not practise this asana without expert guidance.

Benefits: *Bhujangasana* expands the chest, which improves and deepens breathing. can help to remove backache and keep the spine supple and healthy. A stiff spine interferes with all the nervous impulses sent from the brain to the body and vice versa. By arching the spine, improving circulation in the back region and toning the nerves, better communication between the brain and body results. People suffering from slipped disc or sciatica can also benefit from this asana, but care should be taken.

This asana tones the ovaries and uterus, and helps alleviate menstrual and other gynaecological disorders. It stimulates the appetite, alleviates constipation and is beneficial for all the abdominal organs, especially the liver and kidneys. The adrenal glands, situated on

top of the kidneys, are also massaged and stimulated to work more efficiently. The secretion of cortisone is maintained and the thyroid gland is regulated.

Sarvarogavinaashanam, all types of diseases are eradicated by practising this asana. Research has shown that *bhujangasana* strengthens the nervous system. All the nerves from the brain to the toes are energized, and coordination and balance are established inside the body. On a pranic level, *bhujangasana* has a strong effect on all the organs related to *swadhisthana*, *manipura*, *anahata* and *vishuddhi chakras*. *Bhujangini Devi*, or *kundalini shakti*, the evolutionary energy within, is also awakened by this practice.

5. SHALABHASANA (locust pose)^[6]

अध्यास्य शेते करयुग्मवक्ष आलम्ब्य भूमिं करयोस्तलाभ्याम् ।

पादौ च शून्ये च वितस्ति चोर्थ्य वदन्ति पीठं शलभं मुनीन्द्राः ॥

Lie flat with the face towards the ground. Both arms are placed by the sides of the chest. The palms should be placed firmly on the ground. The legs are raised in this position. Munis have called it shalabhasana.

Since the body assumes the shape of a shalabh, a locust, while doing the practice, it is called shalabhasana, the locust pose.

Technique: Lie flat on the stomach with the legs and feet together and the soles of the feet uppermost. In the initial stage the hands may be placed under the thighs, palms facing downward, and can be used as a support to raise the legs, but gradually, with mastery over the practice, the arms are placed by the sides of the body. Stretch the chin slightly forward and rest it on the floor throughout the practice. Close the eyes and relax the whole body.

This is the starting position. Slowly raise the legs as high as possible without straining, keeping them straight and together. The elevation of the legs is produced by applying pressure with the arms against the floor and contracting the lower back muscles. Hold the final position as long as is comfortable without strain. Slowly lower the legs to the floor. This is one round. Return to the starting position and relax the body with the head turned to one side. Allow the respiration and heartbeat to return to normal.

Breathing: Inhale deeply in the starting position. Retain the breath inside while raising the legs and holding the final position. Exhale while lowering the legs. Beginners may find it helpful to inhale while raising the legs. Advanced practitioners may exhale after returning to the starting position.

Duration: Up to five rounds when performed dynamically. Up to three rounds when performed statically.

Awareness: Focus the mind on swadhisthana or vishuddhi chakra.

Contra-indication: Shalabhasana requires a great deal of physical effort, so it should not be practised by people with a weak heart, coronary thrombosis or high blood pressure. Those suffering from peptic ulcer, hernia intestinal tuberculosis and other such conditions are also advised not to practise this asana.

Sequence: Most beneficial when performed after bhujang-asana and before dhanurasana.

Benefits: This asana strengthens the lower back and pelvic organs, and tones the sciatic nerves, providing relief from backache, mild sciatica and slipped disc as long as the condition is not serious. It tones and balances the functioning of the liver, stomach, bowels and other abdominal organs, and stimulates the appetite. The parasympathetic nerves are particularly prominent in the region of the neck and pelvis... physical effort, so it should not be practised by people with a weak heart, coronary thrombosis or high blood pressure. Those suffering from such conditions, hypertension, tuberculosis and other such conditions are advised not to practise this asana.

Sequence: Most beneficial when performed after *bhujangasana* and before *dhanurasana*.

Benefits: This asana strengthens the lower back and pelvic organs, and tones the sciatic nerves, providing relief from backache, mild sciatica and slipped disc as long as the condition is not serious. It tones and balances the functioning of the liver, stomach, bowels and other abdominal organs, and stimulates the appetite. The parasympathetic nerves are particularly prominent in the region of the neck and pelvis. Shalabhasana stimulates the whole autonomic nervous system, especially the parasympathetic outflow.

RESULTS

Participants showed a reduction in BMI and WHR, along with improved spinal flexibility, enhanced digestion, and increased energy levels. The asanas contributed to muscle toning and fat loss around the abdomen and lower back.

DISCUSSION

Backward bending asanas stimulate the parasympathetic nervous system, aiding stress reduction, digestion, and fat metabolism, making them effective in weight management.

CONCLUSION

The inclusion of backward bending asanas in obesity management programs can significantly aid in BMI and WHR reduction while improving overall physical health.

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