Yoga and The Digestive System

There are many ways in which Yoga can contribute to the health of the digestive system.

Movement

Movement is known to help with the elimination function of digestion – yoga, with its targeted movements, can help prevent, for example, constipation. Certain poses help with bloating and gas too. Additionally, yoga boosts circulation to the digestive system for healthy functioning.

Smooth Muscle

Smooth muscle in the gastrointestinal (GI) tract mixes and propels contents to enable efficient digestion of food, progressive absorption of nutrients, and evacuation of residues through a process called peristalsis. Pranayama (yoga breathing) maintains Carbon Dioxide levels in the body which dilates smooth muscle. This means the muscle can function correctly for optimal digestion rather than being constricted & rigid as in the case of someone with CO_2 deficiency caused, for example, by stress.

Bicarbonate Buffer

A healthy level of Carbon Dioxide in the body also maintains the bicarbonate buffer which helps us deal efficiently with acidic foods.

The Enteric Nervous System

Hidden in the walls of the digestive system is the Enteric Nervous System (ENS), sometimes called the second brain. The ENS is two thin layers of more than 100 million nerve cells lining your gastrointestinal tract from oesophagus to rectum. Whilst the ENS can't perform mathematical calculations or plan your next holiday, it does have a big impact on your mood! The ENS is primarily concerned with controlling digestion. However, it communicates continually with the brain via the Gut-Brain Axis, modulated, to a large extent, by the Vagus Nerve.

The Gut-Brain Axis runs in two directions, from brain to gut, and from gut to brain. Some believe the volume of traffic from gut to brain exceeds that of brain to gut. So, whilst anxiety and depression can affect the digestive system, it can work the other way around. Increasingly research is suggesting that irritation in the digestive system (such as IBS, bloating, or pain) can result in anxiety and depression, as this irritation is communicated to the central nervous system, triggering mood change.

How Yoga Helps:

Stress is intimately related to Enteric Nervous System functioning. Many individuals who experience digestive system problems, such as abdominal pain, heartburn, diarrhoea, constipation, and bloating, experience stress because of these issues. But, stress also makes these issues worse, creating a vicious cycle of digestive distress.

Because of the gut-brain connection, external (non-digestive) stress, anxiety, depression etc can work through the Enteric Nervous System to increase digestive system inflammation, and sensitivity to bloating, to speed up or slow down gut motility, heighten our susceptibility to infections, and change the nature of gut microbiome.

1/ Yoga improves the tone of the Vagus Nerve for better communication between the gut and the brain. The brain can thus send sympathetic ("fight-or-flight") and parasympathetic ("rest-and-digest") signals via the Vagus nerve to the digestive system to speed up the contraction of the muscles in the digestive tract when we're relaxed, or slow it down when we need to escape danger. Additionally, the gut can send signals to the brain that encourage us to instinctively avoid foods that have made us sick in the past.

2/ When we are stressed – ie when we activate the Sympathetic Nervous System (SNS) – the body directs energy away from digestion to prime us to fight or runaway. Healthy, efficient digestion thus only occurs when we have a functioning Parasympathetic Nervous System (sometimes called Rest and Digest), which a regular yoga practice helps maintain.

3/ Repeated exposure to stress can alter the diversity and composition of the gut microbiome. Research is showing that bacteria in the gut communicate with the brain via the Gut Brain Axis. A variety of studies have linked the gut microbiome to health and disease. Drastic changes in the microbiome have been observed in patients with autism, major depression, Alzheimer’s disease, and Parkinson’s disease. Yoga, with its capacity to modulate stress, can thus help maintain the health of the microbiome to a large extent.

4/ During stress, an altered gut microbiome affects the regulation of neurotransmitters which it mediates (including “happy” serotonin, 90% of which is produced in the digestive tract) and gut barrier function. In the absence of stress, a healthy microbiome produces short-chain fatty acids that exert anti-inflammatory effects. Yoga and meditation help regulate the stress response, thereby helping maintain healthy neurotransmitter levels, suppressing chronic inflammation states (the Vagus Nerve can inhibit the production of proinflammatory cytokines) and maintaining a healthy gut-barrier function.

5/ Yoga can help to down-regulate the stress response of the Sympathetic Nervous System which lessens sensitivity to pain and discomfort caused by gastro-intestinal issues.

6/ As mentioned above, by maintaining proper CO_2 levels, smooth muscle can relax, rather than tensing up. The brain interprets tension as threat – reduced tension in the digestive system thus communicates well-being to the brain.