A research project into Chronic Obstructive Pulmonary Disease (COPD) from the perspective of Yoga Therapy

Physiology and pathology of the condition, it's variations, orthodox treatment and prognosis

Chronic Obstructive Pulmonary Disease (COPD) describes obstructive lung disorders that are characterised by a blockage of airflow through the respiratory system; most commonly, COPD refers to chronic bronchitis and/or emphysema. Healthcare professional often prefer to use the term COPD because there is often an overlap.

Chronic = it's a long-term condition and does not go away

Obstructive = your airways are narrowed, so it's harder to breathe out quickly and air gets trapped in your chest

Pulmonary = it affects your lungs

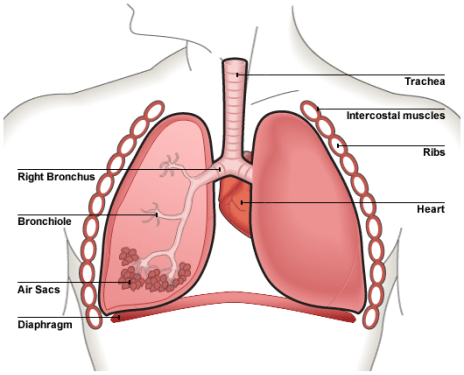
Disease = it's a medical condition

(British Lung Foundation 2020)

Lung Anatomy and COPD

Each lung has a bronchi which branches into smaller and smaller tubes (bronchioles). At the end of the smallest air tubes, there are tiny air sacs (alveoli) which look like a bunch of grapes.

In healthy lungs, each airway is clear and open, the air sacs are well formed, and both are elastic and springy. When you inhale each air sac fills up with air, like a small balloon, and when you exhale the balloon deflates.



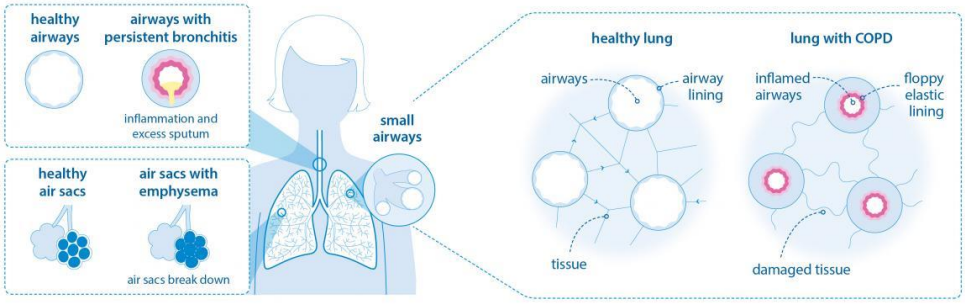
(A Level Notes, 2018)

In COPD, the bronchi (airways) and alveoli (air sacs) lose elasticity and this leads to inefficient gas exchange meaning lungs fail to take in adequate oxygen and release carbon dioxide.

Bronchitis is inflammation of the bronchi or airways; the cells in the bronchi produce too much mucus and the inside of the bronchi become swollen and inflamed. This, as well as mucus clogging the bronchi, makes it difficult to breathe.

The term "emphysema" is derived from the Greek word meaning "to inflate." In emphysema, the walls between the air sacs are destroyed and so instead of tiny air sacs, there are large baggy ones. These means less surface area for the exchange of oxygen and carbon dioxide leading to shortness of breath.

Most people with COPD have both chronic bronchitis and emphysema.



(British Lung Foundation 2020)

What causes COPD?

COPD is often the result of inhaling noxious gases, in particular cigarette smoke but also from other environmental sources. There is a familial link in terms of both an inherited predisposition and a genetic condition, alpha-1-antitrypsin deficiency, which makes people susceptible to developing COPD at a young age.

Symptoms of COPD may include:

- Cough - that doesn't go away
- Sputum (mucus) production – more than usual
- Shortness of breath, especially when carrying out everyday activities
- Wheezing – often in cold weather
- Chest tightness.

A cough and coughing up lots of mucus often occur years before the flow of air in to and out of the lungs is reduced.

Diagnosis

According to the National Institute for Health and Care Excellence (NICE) 2018) COPD has four stages:

1. mild
2. moderate
3. severe
4. very severe - respiratory failure or signs of right-sided heart failure may develop - quality of life is greatly impaired and the worsening symptoms may be life-threatening. Loss of appetite is also a symptom of late stage COPD.

A breathing test called spirometry is used to determine whether someone has COPD. You breathe hard into a large hose, when you breathe out, the spirometer measures how much air your lungs can hold and how fast you can blow air out of your lungs after taking a deep breath. This is your forced expiratory volume (FEV). The test can even detect if you are at risk.

A chest X-ray and blood test are often used to rule out other causes of symptoms.

Treatment

Various treatments can slow the progression of COPD, but the damage cannot be reversed.

Treatments include:

- Smoking cessation
- Annual flu jab and vaccination against pneumonia
- Pulmonary rehabilitation
- Medicine or combinations of medications to improve breathlessness and help prevent flare-ups
  - Bronchodilators – open the airways - (short and long acting are avaliable depending on when breathlessness occurs)
  - Steroid inhalers – reduce inflammation and swelling in the airways
  - Combination inhaler – with one or two bronchodilators and a steroid.

Progression treatments include:

- Oxygen therapy– used if blood oxygen levels are low
- Non-invasive ventilation – 'gives the muscles a rest'
- Surgery:
  - lung volume reduction procedures for emphysema
  - a lung transplant

Prognosis

A person with COPD eventually dies when the lungs and heart are unable to function and get oxygen to the body's organs and tissues, or when a complication, such as a severe infection, occurs. A clear prognosis in terms of life expectancy is difficult because so much depends on the individual's response especially in terms of life style.

Lifestyle Implications

According to Franssen et al (2018) “Chronic obstructive pulmonary disease (COPD) is associated with substantial health impact that may already become apparent in early disease”.

Miravitlles & Ribera (2017) acknowledge that “COPD imposes a substantial burden on individuals with the disease, which can include a range of symptoms (breathlessness, cough, sputum production, wheeze, chest tightness) of varying severities”.

Norweg and Collins (2013) identified that "Dyspnea is a complex, prevalent, and distressing symptom of chronic obstructive pulmonary disease (COPD) associated with decreased quality of life, significant disability, and increased mortality”.

Even when symptoms are not particularly severe, there is potential for a **significant impact on lifestyle not least the ability to carry out simple every day activities.** For example, Kessler et al (2011) when investigating symptoms and their impact on daily life activities among patients with COPD, found that 92.5% of patients reported experiencing COPD symptoms during the previous week. Those taking part in the study cited a range of daily activities (e.g. ‘going up and down stairs’, ‘doing heavy household chores’, ‘going shopping’, and ‘taking part in sports and hobbies’) and morning-specific daily activities (‘washing’, ‘dressing’, ‘drying’, and ‘getting out of bed’) as being most affected by their COPD symptoms.

Furthermore, and in line with various studies including that by Miravitlles & Ribera (2011), members of the Wadebridge Breathers group reported that **the physical nature of early morning activities, coupled with the fact that their COPD symptoms seemed worse in the morning, often left them ‘puffed out’ which had a knock on effect with regard to performing other daily activities.**

Potentially linked to the fact that COPD symptoms seem to be worse in the morning, Agusti et al (2011) found there was a **scarcity of research into the impact of COPD on sleep.** Miravitlles & Ribera (2017) found this particularly worrying given the “potential detrimental clinical impact of … sleep disturbance on long-term changes in lung function, exacerbation frequency, cardiovascular disease risk, cognition, depression, quality of life, and increased mortality”. In a 2017 study Medic et al found that, “Sleep disruption is associated with increased activity of the sympathetic nervous system and hypothalamic–pituitary–adrenal axis, metabolic effects, changes in circadian rhythms, and pro-inflammatory responses”.

Given the fact that carrying out daily activities can be so demanding for those with COPD, and because of the effect that breathlessness has on exercise tolerance, it is easy to see that a cycle of relative inactivity could imbue. This would, of course, only serve to increase feelings of fatigue, led to muscle wastage and a premature decline in health. It is not surprising then that The Global initiative for Chronic Obstructive Lung Disease (GOLD) main

recommendation is motivating patients to do more physical activity and the British Lung Foundation dedicates a whole area of its website to 'keeping active with a lung condition'.

Linked closely to the difficulty those with COPD have in carrying out daily activities, people with COPD often have to give up work because their breathlessness stops them doing what they need to do for their job. Even for those who do not need to give up work, there is an obvious impact on the type of work including the range of work related activities that they can carry out as well as days missed due to the condition. In a 2000 survey, Rennard et al found that "36% of respondents reported that their COPD kept them from working, limited their ability to work, or caused them working time loss in the past year". Naturally, the impact on lifestyle is multi-faceted in terms of a decline in income, any perceived loss of status and a reduction in social interaction.

Mental and Emotional Aspects

Interwoven into the lifestyle implications of COPD, are the mental and emotional aspects. Smid et al (2017, cited in Franssen et al, 2018) identified that "…the burden of disease for the individual patient is only partially reflected by the physical limitations". Dury (2016) **noted that patients with COPD experience worse psychological functioning and greater psychological distress than patients with other chronic medical conditions and that anxiety and depression are important considerations in patients with COPD.** Willgross and Yohannes (2017, cited in Miravitlles & Ribera, 2017) suggested there was evidence to suggest that there was a direct relationship between dyspnea and anxiety/depression in patients with COPD. Naturally, the reasons for this would be multi-faceted in terms of the obvious anxiety that dyspnea would create, the impact of inactivity and social isolation on mental health and that long-term anxiety can lead to depression. "Whereas anxiety may appear earlier than depression, the latter is related to the severity of COPD and to the degree of impaired functioning. Both conditions significantly affect COPD prognosis" (Zamzam et al 2012). This view was echoed by Miravitlles and Ribera (2017) who found that overtime COPD sufferers who develop anxiety and depression go onto develop have greater dyspnea than those that don't. It is clear that ensuring those with COPD are fully aware of, and supported in addressing the psychological impacts of the condition.

Having spoken at length with the Wadebridge Breathers Group about the mental and emotional aspects of living with COPD, they were unanimous in reporting social isolation as the most detrimental. Embarrassment, in terms of not being able to chat without getting breathless and avoiding social situations, including family events, led to loneliness. In their

2012 study Zamzam et al found that a significant number of participants felt that their "cough or breathing is embarrassing" and a nuisance to family, friends and neighbours".

These seems to be a particularly upsetting aspect as many people living with COPD obviously feel that they are an embarrassment and/or a nuisance. What is even more upsetting is that there is evidence that COPD as a condition brings with a certain stigma that those living with the condition are subject. **The stigma of COPD arises because people are often held responsible for their disease.**

Linked to the stigma that can accompany COPD is the idea of guilt. Those with COPD can experience feelings of guilt in that they have 'made bad choices', or can be made to feel guilty as they have, what is often perceived to be, a self-induced illness – this if more often the case when COPD is the result of smoking. Members of the Wadebridge Breathers Group reported having even experienced this type of response from health care professionals. One member reported that, following her COPD diagnosis, her GP had asked, "What did you expect?" – this was in relation to her being a smoker. From whichever source it manifests, guilt can have significant effects on overall health and wellbeing. Another strong emotion evident amongst members of the Wadebridge Breathers Group was anger. This was so apparent that discussion became somewhat centred on this. Their anger was not related to feelings of guilt, or at having developed the condition, it was fuelled by a sense of being let down by the health care system. Several members of the group discussed how they had been misdiagnosed with chest infections, asthma etc. for several years before being diagnosed with COPD. One member of the group felt that had he been diagnosed early, that he could have taken measures to combat the disease.

Miravitlles et al (2012) found that primary care physicians may have difficulty in classifying up to 20% of patients with obstructive pulmonary symptoms. Price et al (2010) found that differentiating between asthma and COPD can be difficult, but treatment and objectives differ between the 2 conditions but as Tinkelman et al (2006) acknowledge misdiagnosis could lead to improper treatment and substandard outcomes.

Hangaard et al (2017) even suggested that spirometry (the test used to help diagnose COPD by measuring how much air you can breathe out in one forced breath) may also lead to the misdiagnosis of COPD. This idea is that using a fixed value threshold leads to misdiagnosis because it doesn't take into account difference due to age, sex, ethnicity and general fitness etc.

Yoga Therapy and COPD

“As long as there is breath in the body, there is life. When breath departs, so too does life. Therefore regulate the breath” The Hatha Yoga Pradipika cited in Koay & Barenholtz (2009)

Breathing is an essential bodily function but for those living with COPD breathing is not straightforward. The impacts of the disease are not only life limiting but also limit life.

Various studies have looked at the impact of yoga, predominately asana and pranayama, on COPD. More than 20 years ago, Vedanthan (1998) began a series of studies aimed at documenting the impact that practising yoga techniques could have on those with various lung conditions. In his studies with COPD patients, he explored the impact of Yoga Breathing techniques (YBT) or pranayama. **Vedanthan found that, whilst lung function was not improved by the practice of pranayama, it did reduce participants need for supplemental oxygen.** It was concluded that YBT seems to offer some benefit to patients with COPD.

A later 2006 study by Katiyar and Bihari explored the effect of pranayama on patients with COPD. This used a variety of pranayama techniques including Bhastrika, Kapalbhati, Anulom-Vilom, Bhramari and Ujjayi pranayamas. **Whilst again there was no increase in lung function, participants benefitted from a significant increase in the distance that they could walk in 6 minutes**, the 6-minute walk test (6MWT) was developed by the American Thoracic Society, the object of which - quite simply to walk as far as possible for 6 minutes. **Participants also experienced a significant decrease in symptoms and dyspnea-related distress.** The decrease in symptoms and dyspnea-related distress were identified using the St. George's Respiratory Questionnaire (SGRQ), a questionnaire commonly used when asking patients with COPD to self-assess.

A 2009 study by Donesky-Cuenco et al aimed to evaluate whether a yoga programme that included asanas and visama vritti pranayama could decrease dyspnea intensity and, dyspnea-related distress in patients with COPD. It was a twice-weekly programme and whilst the asanas used were not detailed, they were taught by a qualified yoga teacher. **While the programme had only small effect on dyspnea intensity, participants saw an improvement in the 6MWT and a decrease in dyspnea-related distress.**

Just reviewing these few studies make it apparent that yoga increases walking capacity and endurance and decreases dyspnea-related distress. The 2013 study by Norweg and Collins identified that this in turn promoted adherence to exercise programs and adaptive lifestyle changes.

In 2019 Samajdar et al took a prospective look at the effect of AUM chanting on improving pulmonary function in patients with mild to moderate COPD. The study included 30 COPD patients with one-half of these chanting AUM alongside prescribed medication. In line with previous studies there was little change in detectable pulmonary function and unlike previous studies there was no improvement in the 6MWT. What the study did find, that was again in line with previous studies, was a **significant decrease in anxiety amongst the AUM chanting group**.

Given that it is a respiratory disorder, it is easy to appreciate why most studies focus on the effects of pranayama on patients with COPD. When asana has been cited as a part of studies, details about which asana have not been included. One could presume that asana that encouraged an opening of the chest were utilised. Naturally, the additional benefits derived from asana, such as muscle strengthening – an issue due to a lack of exercise in many sufferers – would improve overall quality of life. In addition, the reduction in anxiety seems well established, it naturally follows that there will be a reduction in anxiety related health issues.

Perhaps one of the main benefits of yoga is what McCall (2007) referred to as a 'patient controlled approach'. COPD is often characterised by a loss of control, the disorder dominates and robs the patient not only of their breath but also their quality of life. Yoga, and in particular slow deep nasal breathing, has the potential to give the control back to those living with COPD. As McCall notes the benefits of nasal breathing include filtering of pollutants, and reduction in sleep apnea, asthma attacks, and dyspnea. It is also an excellent practice to use when calming or stilling the mind.

Whilst studies predominately focus on the physiological improvements that yoga can bring about for patients with COPD, **Tencza (n.d.) begins to explore how yoga has the ability to help those living with COPD in "finding peace and freedom through inner contentment will assist them in finding true happiness".** Tencza goes on to explain how, "Those afflicted with physical constraints often find the mind clouded and unable to focus on anything else. Practicing asana and pranayama to alleviate and heal physical needs will allow the mind to still and concentrate on inner healing".

The focus on asana and pranayama, evident even outside the focus on COPD, rather than on the first two limbs of yoga are perhaps due to the fact that "it is easier to open a new student's body than to open his mind" (Koay & Barenholtz 2009, p215). Despite this, **yoga has the potential to bring about changes in those with COPD well beyond improvements in physical health. It has the potential to aid acceptance and to bring a sense of harmony enabling suffers to meet themselves where they are and then to move forward.**

Yogic Diagnostic Tools

As a pulmonary disorder COPD manifests in **annamaya kosha** with it's effects easily detectable in our grossest of bodies. The distressing symptoms of COPD, lead to dyspnea-related anxiety and a subsequent reduction in activity. This reduction in activity leads to further complications in annamaya kosha including, to name but a few, muscle wastage and balance issues. In addition, those living with the disease are more likely to develop cardio-vascular issues (including an increased risk of developing heart disease), lung cancer and a variety of other comorbidities. As annaymaya kosha is nourished by prana and as prana is harnessed through the breath, it follows that COPD significantly affects vital energy; this manifest in low energy and fatigue.

"In the body prana performs respiration…lights the agni….. it is required for the most basic of life's processes, namely digestion…" (Koay & Barenholtz 2009, p193). Whilst it is beyond the scope of this project, it would be interesting to look at the impact of COPD on digestion. It is certainly true that Ayurveda makes links between poor digestion and breathing conditions and suggests that ama (undigested food) is the root cause of many diseases. Whilst the cause of COPD is mostly traceable to external factors, particularly the success of the tobacco industry, it would be interesting to investigate whether, due to the reduction in prana being harnessed through the breath, poor digestion increased as COPD developed.

Whilst briefly mentioning **Ayurveda**, it is worth noting that, due to the lack of movement in the lungs, COPD is most likely a kapha related disease. The connection to air, however, suggests a link to vata.

As established, COPD reduces the body's ability to absorb prana and as such, **pranamaya kosha** will be significantly impaired. There will be a lack of vital energy, with the whole of the kosha depleted.

Prana is carried throughout the body via channels called nadis, the most important nadis being sushumna, ida and pingala. The vayus are the winds that aid the movement of prana. Prana-vayu (forward moving air) is stimulated by inhalation and so the significant effect on this vayu is obvious. The quality of the inhalation of those with COPD can become so poor that it becomes little more than a grasping. In this case, prana-vayu will be so weak that there will be very little to 'move the individual forward'.

Apana-vayu (air that moves away) governs all elimination including the elimination of cardon dioxide. Those with COPD have significant difficulties in exhaling and so it is easy to see that there would be a build-up of 'stale air' in their lungs.

Udana-vayu, (the upward-moving air) also links to COPD in that it governs optimal respiratory function. It also links to our enthusiasm for life which is often much depleted in those living with the disease.

Samana-vayu (balancing air) would work in the lungs to balance air-flow. The poor gas exchange in the living with COPD suggests a weakness in samana-vayu. It also balances digestion and links with poor digestion have been established.

Vyana-vayu (outward-moving air) governs circulation and moves oxygen to the periphery of the body. With poor oxygen levels, this vayu will have little to work with!

The poor flow of the vayus impacts on the functioning of the **chakras:**

Muladhara links to our survival and this is has become a battle for many people with COPD. The fear of dying that becomes so real when those living with the disease can't 'catch their breath' will block the flow.

Swadhisthana links with adrenal glands and our response to stress. As poor breathing results in domination by the sympathetic nervous system, swadhisthana will become exhausted.

Manipura is the seat of prana and our vital energy centre. Prana and apana vayu meet here – it could well be the case that manipura is significantly out of balance in those with COPD. Prana igniting agni and as such those with COPD would have little 'fire in their bellies. Their sense of personal power would be depleted and this perhaps accounts for the sense of hopelessness they often experience. "This chakra also innervates the diaphragm, which is one of the main organs of respiration." (Koay & Barenholtz 2009, p203).

Anahata is located in the region of the heart and as it is a respiratory condition, COPD will lead to an imbalance in anahata. Anahata governs our emotions and COPD brings with it a whole host of emotions; anger, sadness, grief. As the disease progresses, relationships are tested as people can need additional support and feel like a burden. The sense of 'togetherness' is really important for those with COPD.

Vishuddhi is the throat chakra and governs communication which can become very difficult for those with COPD. Conversations plagued by coughing fits mean those with the disease often avoid situations that require them to chat. Those with COPD often feels ashamed about their condition and as such are reluctant to communicate about it.

Ajna is especially affected by prana as this is where ida and pingala nadis meet. An imbalance here links to a lack of concentration and confusion, a lack of clarity about the way to move forward.

Sahasrara – a sense of togetherness is very important to those with COPD; the impact of having a sense of connection to something greater than self can never be underestimated.

Short, shallow or sharp breathing indicates an active, anxious or depressed mind. As such, it is easy to see how COPD affects **manomaya kosha**. Our samkaras 'live' in manomaya kosha and for many with COPD negative thought patterns and low self-esteem - "I deserve this", "I am useless", "I am an embarrassment" - are the norm. Manomaya kosha is our emotional body and anxiety and depression are well-documented amongst those with COPD. This is exasperated by too much time spent inactive and alone – too much time spent 'in their heads'. By improving the intake of prana, the effects of COPD on manomaya kosha would be significant.

"Steadiness of mind and breath interact and makes the intellect steady too," B.K.S. Iyengar **Vijnanamaya kosha** is the wisdom body; it is where clarity lies. If the clarity of vijnananaya is not accessed, acceptance and the discernment to make good choices in relation to the condition would be difficult.

Anandamaya kosha is bliss body. As established, COPD has a significant impact on the body's ability to take in prana. As prana is Prana manifest, COPD has the potential to negatively impact on an individual's link to Prana and in turn their true 'self'.

As prana enters the body, it does much more than provides the physical body oxygen. It As well as providing vital energy, it has the ability to connect us to something much greater than themselves – Prana or universal energy.

As those with COPD take in reduced amount of prana, they are less able to connect with all that this universal energy provides in terms of a sense of peace, contentment, joy, 'bliss'.

This perhaps explains the loneliness or sense of alienation experienced by those with COPD far better than the fact that they might often be alone.

Yoga Therapy Sessions

Session ONE:

Become present:

Take a few moments in a seated position to encourage the client to 'tune

in'.

I would invite the client to sit tall – as this would open the chest and anahata – but would avoid, as this may be a trigger for breathing difficulties/anxiety etc., any mention of the breath at this point.

I would encourage the client to 'feel' their feet rooting into earth.

This could help to ground and start, in some small way, to help the flow of apana and address imbalances in muladhara.

Pawanmuktasana (Joint-Freeing):

As the condition progresses, less and less oxygen is able to enter the blood stream and as a result muscles and joints receive less oxygen, patients experience aching muscles and joint pain. Joint freeing is a useful warm up and would allow for a gentle introduction to combining movement and breath. Joint freeing can also help increase range of motion of the joints and strengthen muscles. Pawanmuktasana may need to be modified if the client has mobility issues, perhaps they might need to sit on a chair, but I find the joint freeing series developed by Mukunda Stiles to be accessible and easily adapted. It can be practiced in a steady and controlled manner giving those with COPD a much-needed sense of control.

Pranayama: alternate nostril breathing with arms extended out – palms facing up to keep the chest open - and resting on the thighs. 'Drawing' the breath up one arm to the 'third eye' and exhalation down the other arm would allow the client to start to explore pranayama, and replenish prana, but avoid the association with lungs. Ajna would be stimulated along with the parasympathetic nervous system.

Asana:

One of the key problems associated with COPD is poor posture and so a posture awareness exercise – maybe in tadasana - would be a good introduction to asana.

- Ground feet – either with feet apart for added stability or holding onto a chair. As

COPD affects oxygen levels, muscles don't get the oxygen they need to function properly and this can affect the ability to stand.

- Another key area of posture awareness for those with COPD is the upper torso. I would encourage good alignment with chest lifted and shoulders back but relaxed.
- Due to extra effort of breathing, COPD can lead to tight neck muscles and so another important cue is keeping the neck long.
- Arms by sides with palms facing forward would help to help open chest. Palms facing forward will create a rotation in the shoulders which will gently expand the chest.
- I would encourage the client to feel the grounding of the lower body (help with the flow of apana and to balance muladhara) and to feel a rising up of the upper body (help the flow of udana vayu as the spine elongates). I would use words like 'supported' in relation to the lower half of the body – many people with COPD feel anything but - and 'light' for lifting the upper body – the prevalence of kapha in the lungs/respiratory tract will create a heavy feeling.

Another key problem for those with COPD is reduced chest mobility and so gentle chest openers would be beneficial. Again, I would not focus too heavily on the breath.

- Angel wings will open the chest, increase the movement of prana-vayu and help address excess of kapha in the lungs.
- Adapted/gentle triangle pose will strengthen the diaphragm while improving the flexibility of the rib cage.
- Dumb waiter exercise – with elbows bent and tucked into the sides of the body, palms face up. Keeping the elbows tucked in and shoulder blades gently down, hands are slowly opened away from the body – will strengthen the muscles in the upper back and help realign shoulders.

Guided relaxation/visualisation:

Guided relaxation with head and torso supported to avoid being fully supine as this can be difficult for someone with COPD. Any relaxation will activate the parasympathetic nervous system and as less oxygen is needed, exploring ways to relax will be an important part of the sessions. Relaxation will also help build immune system, which is important as those with COPD are susceptible to secondary infections of respiratory tract.

I would use a healing sun visualisation as the sun is a source of prana and the client will be encouraged to feel the sun warming and relaxing them.

Session TWO:

After an initial grounding exercise and modified pawanmuktasana (see Session 1):

Prananyama: In a seated position 4-6 breathing with a focus on breathing into and from the abdomen can be used to extend the exhalation - a significant issue for those with COPD - but avoid a focus on lungs. Hands can be placed on the abdomen to encourage rising on the inhalation. Samana- vayu will be simulated and the importance of the diaphragm, as the major muscle associated with breathing, will be introduced. 4-6 rhythm may be too demanding and so I would encourage any personal rhythm that aims to extend the exhalation.

Asana:

Revisit posture awareness exercise – again with palms facing forward to open the chest.

Revisit focus of opening the chest and introduce another movement/breathe combination exercise by simply inviting the client to inhale palms forward exhale palms facing backwards. As well as encouraging an opening in the chest, this simple exercise is a form of pranayama and shows how movement can be aided by the breath.

Introduce the idea of keeping the spine supple to keep respiratory muscles strong and flexible.

- Arms up in tadasana to stretch the spine and intercostal muscles – support may be needed as so one arm at a time may be necessary
- Take arms above head and encourage a lateral stretch by clasping the opposite wrist. This will create a lateral flexion of the spine which will stretch the diaphragm as well as the intercostals
- Cat/Cow (Chakravakasana) as mentioned COPD can lead to tight neck muscles, placing a brick at the front of the mat will encourage a lengthening of the neck muscles whilst avoiding the neck being thrown back and muscles pulled.
- Swinging arms with feet together, head looking forward will introduce a gentle twist and release upper back muscles

Yoga Nidra (again with head and torso supported):

Sleep disturbance is a significant issue for those with COPD. Lack of sleep and an increase of symptoms during the night-time often means that they are exhausted even before they get out of bed. This feeling of exhaustion will, most likely, be present in all koshas and certainly, due to the limited intake of prana, pranamaya kosha will be 'running on empty. I would avoid an overly prescriptive yoga nidra and opt instead for short focused relaxation of the physical body and then invite the client to use the 'felt sense' of contentment that the sun, an important source of prana, can create. This could then be used to aid 'letting go' of tension in the body. When guiding the client out of the Yoga Nidra, I would invite a gentle observation of the breath - using words like 'it is perfect as it is'.

Session THREE

'Tuning In' and Pranayama:

As there was reference to the breath at the end of the last session, I would combine 'tuning in' to the session with three-part breath (Deergha Pranayama). I would start with the initial focus on the rise and fall of the abdomen and then invite the client to hug their arms around their body to explore the expansion and contraction of the ribcage, before moving on to explore movement in the upper chest with a focus on the heart centre (anahata).

This would increase prana in the body, empty the lungs (which increases apana-vayu, reduces kapha and the risk of respiratory infections) and increase the influence of the parasympathetic nervous system.

Pawanmuktasana (Joint-Freeing):

After the combined tuning in and pranayama – a 'relaxed' joint freeing would bring energy to the session and help circulate (vyana- vayu) the refreshed prana. I would not ask the client to focus on the breath and aim to make this fun and, thus, address any anxiety, conscious or otherwise, that might have arisen during three-part breathing.

Asana:

To revisit the idea that the breath can aid movement, and with a focus on the front ribs, I would invite the client to use the breath to aid seated sun salutations.

This would strengthen the whole of the respiratory system and highlight how the body responds to the breath. If needed, the client could use soft, slow, and continuous breathing with pursed lips. They are taught this in the COPD rehabilitation course and it may aid with stamina and help control shortness of breath. Repetitions will have an aerobic effect and improve cardiac efficiency.

Relaxation again with head and torso supported but maybe less so than before):

After the sun salutation there may have been an increase in the dominance of the sympathetic nervous system and so relaxation, as well as being most welcome, helps the nervous system to switch to the parasympathetic.

After a guided relaxation of the physical body, a focus on abdominal breathing to still the breath, I would guide the client into quiet. Those with COPD, like many who suffer with anxiety, struggle to quieten the mind at night-time. I want to the client to explore using gentle abdominal breathing, in a relaxed position, to quieten the mind.

Session FOUR (bringing it together and continuing practice on and off the mat)

Initial tuning in with a reminder of three-part breathing – definite initial focus on the abdomen as client may need an extended amount of time to settle the breath.

Pawanmuktasana: A regular joint-freeing practise will be invaluable as a warm up, to combine movement and breathe, increase range of motion of the joints and strengthen muscles. In addition, it will provide the sense of control discussed under Session One.

If the client preferred the less formal version in Session Three, they could opt for this.

Asana:

In tadasana I would remind the client of the posture awareness cues and introduce gentle Uddiyana Bandha “draw your navel in towards your spine and up towards your ribcage”- this would help to tone the diaphragm and help eliminate stale air by massaging it out.

With core still engaged I would encourage the client march on the spot – this would increase endurance for walking and the client could build this up over time. A good swing in the arms would help release shoulders, relax pectoral muscles and strengthen back muscles.

Movements of the spine:

Revisit the need to keep the spine supple to keep respiratory muscles strong and flexible: See Session Two.

AUM Chanting: to help respiratory system and in turn help the client to project their voice which will stimulate vishuddhi and give confidence. Udana-vaya would be encouraged.

If the client was not comfortable with AUM chanting, it could be replaced with vowels etc. The idea is not really about kirtan but seeking out joy!

Self- Relaxation (guided):

- Encourage the client to use three-part breathing to still the breath but with a reminder of lengthening the exhale.
- Remind them of the relaxing effect that this can have on the physical body and how it can quieten the mind. Tap into the stillness.
- Encourage the client to acknowledge all sensations/thoughts but remind them that they are transient and will pass – avoid attaching a story to things e.g. if the breathing is raspy/ let it be, observe it but don't try to change it.
- Remind the client that the stillness is always there even in the night-time when their anxiety might be high.
- Remind them that relaxation is a practice and it improves over time.

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