

Osteopathy for prolonged symptoms after COVID-19

Pilot study: Can osteopathic treatments change prolonged symptoms after COVID-19? | Sabine Foster-Garn

In a pilot study, Sabine Foster-Garn investigated whether osteopathic treatment can change prolonged symptoms in post-COVID-19 patients.

The following article provides an overview of the results and the assessment.

Since the outbreak of the SARS-CoV-2 pandemic with the first confirmed case on December 1, 2019 [1], the pathogen has now spread worldwide. In the scientific research work on the disease COVID-19 caused by the pathogen SARS-CoV-2, great attention was initially paid to the acute symptoms, which initially pointed to a primary lung issue [2]. In the further course of the pandemic, however, a much more systemic clinical picture crystallized [3], with changes and damage in addition to the lungs [4] also in the vascular system [5], in the cardiac area [6], in the nervous system [7], in the urogenital system [8] and in the digestive system [9].

Although the majority of infections are asymptomatic or very mild, the long-term consequences for those infected cannot yet be fully assessed. According to the current state of science, however, it can be assumed that at least some of those affected will experience long-term changes and damage that will still affect them weeks to months after the acute infection [10]. This also seems to be the case with mild courses of infection:



Fig. 1: A pilot study examined the extent to which osteopathic treatment can change post-COVID symptoms.
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Sudre et al [11] gives the percentage of infected people who report prolonged symptoms after their acute illness with the virus, with approx. 10% in 18 to 49 year olds and up to 22% in over 70 year olds.

According to this study, women, people with a higher BMI and those with asthma had a greater risk of developing prolonged symptoms.

Symptoms that have been repeatedly described by those affected as remaining: Fatigue, tiredness, shortness of breath (particularly when exerted), persistent urge to cough, pressure or pain in the chest area aggravated by exertion, joint pain and headaches as well as reduced senses of smell and taste, hearing and sight. In addition, they reported dizziness and balance disorders, reduced concentration and memory, poor sleep quality, menstrual changes and mental depression [12].

In osteopathy, manual techniques for the diagnosis and treatment of many of these systems affected by the disease are described and applied on a fascial basis [13]. By using manual traction and pressure techniques, osteopathy is based on the assumption that, on the one hand, the

tissue mobility within the body cavity and between the tissues can be improved, and on the other hand, the arterial, venous and nervous supply and through this also the tissue structure itself. As a consequence, one hopes to stimulate the self-healing powers of the organism with improved function and homeostasis [14].

Based on this assumption, the hypothesis was put forward that osteopathic treatments could bring about changes in the persistent symptoms of the above-mentioned patient population.

Methodology

10 subjects (1 male, 9 female) with prolonged symptoms after their acute illness (between 10 and 48 weeks), aged between 34 and 74 years, were recruited through medical cooperation partners. The treatment series consisted of 6 treatments of 60 minutes each over a maximum period of 3 months per subject. At the beginning and end of the treatment series, an SF-36 questionnaire [15] on the current state of health was filled out, a 6-minute walk test

Information about the Article and Acknowledgments

This article is based on my DO work that was submitted to the Bundesverband Osteopathie e. V. – BVO. Dr. med. dent. Dr. med. univ. Alexandra Bodmann-Peschke supervised the work in her function as a BVO board member. Therefore, Dr. Dr. Bodmann-Peschke, my heartfelt thanks.

[16] was completed and I carried out a detailed osteopathic assessment. This osteopathic assessment included initially a detailed questioning on the course and symptoms of the individual acute illness and their subjective state of health on the day of questioning. This was followed by an extensive physical osteopathic assessment.

Osteopathic measures

Therapeutic osteopathic measures were adapted to the individual osteopathic findings and included:

- Manual mobilization of the thorax and spine including joint and soft tissue techniques.
- Treatment of the viscerovascular system according to Barral [17] in the thorax, abdomen, neck and head area.
- Visceral treatment according to Barral [18] with a focus on the lung, trachea and bronchial area, mediastinum, cardiac area, area of the hiatus esophageus and stomach and the renal fascia on both sides.

Where necessary, the following were carried out in the abdominal area:

- Treatment in the areas of the sphincter oddi, ductus choledochus and pancreas.
- Treatment of the nervous system according to Barral [19] with a focus on the brain areas defined in the initial osteopathic assessment (there was a tendency for findings to be more localized on the right side of the brain, compressions/lower fluidity in the frontal and temporal lobes [in both cases more in the caudal, medial area], diencephalon, brainstem, dural hardening and tension particularly in the area of the posterior and medial cranial fossa, in the area of the foramen magnum continuing down the dura mater spinalis, tension in the area of the pons cord tract).

The following cranial nerves were treated in all subjects:

- olfactory nerve (I),
- trigeminal nerve (V),
- vestibulocochlear nerve (VIII) and
- vagus nerve (X).

Where appropriate, the following were also treated:

- facial nerve (VII),
- glossopharyngeal nerve (IX) and
- hypoglossal nerve (XII).

The treatment of peripheral nerve structures according to Barral [20] included:

- cervical plexus, especially the phrenic

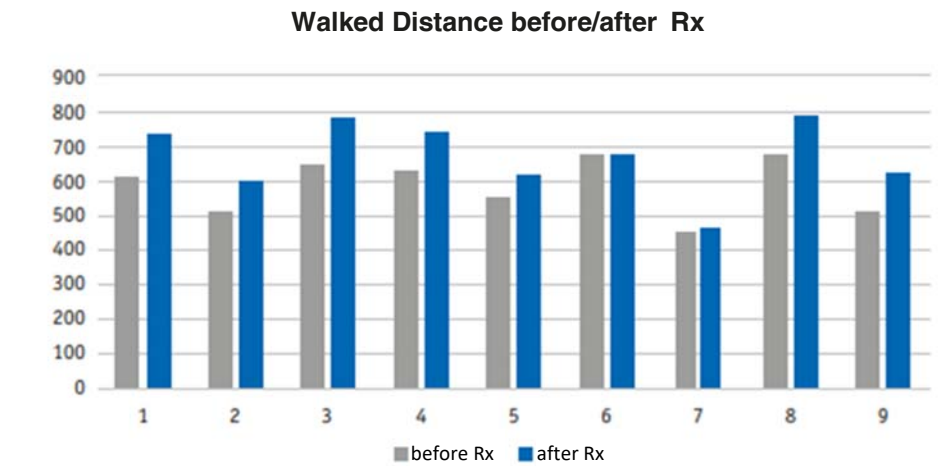


Fig. 2: There was a statistically significant improvement in the 6-minute walk test after osteopathic treatment. Note: One person was unable to complete the 6-minute walk test due to acute joint problems in the legs. For reasons of clarity in the column statistics in the text, the results for this person were placed at the end of all column charts and are not included in this table.

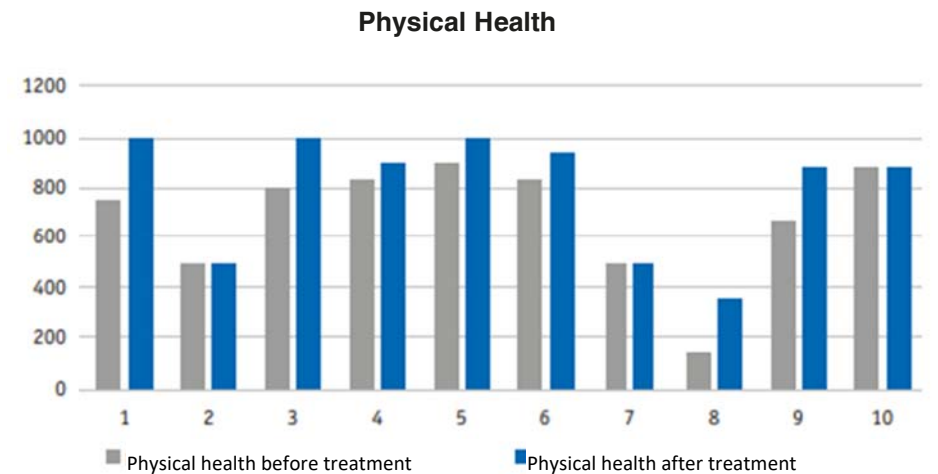


Fig. 3: The physical health was also rated more positively by the subjects after the treatment.

nerve, somewhat less frequently lumbar plexus, very rarely brachial plexus.

- Cranial techniques from the Upledger CranioSacral Therapy [21] on the skull bones of the neurocranium and viscerocranium were performed.

An individual home program was developed based on the initial osteopathic findings and included stretching of the ventral bowstring in most subjects, including deep abdominal breathing and stretching of the dorsal fascia.

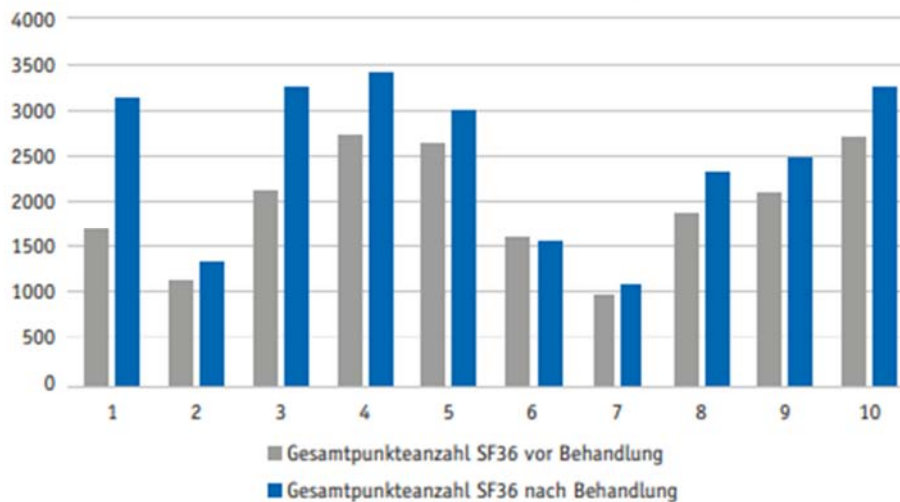
Due to the vascular inelasticity perceived in all test subjects during the initial osteopathic assessment and in view of the medical preliminary clarification before the start of the pilot study, all test subjects were

also instructed to exercise up to the point of sweating once a day. No particular time limit was specified for this. The focus was on the test person briefly becoming noticeably warm. This was mostly achieved by climbing stairs or walking very quickly. The data obtained in this way was automatically statistically evaluated using the program's internal statistics tool from Microsoft Excel (Windows 10).

Results

The evaluation of the data showed a statistically significant improvement in the results of the 6-minute walk test (p [one-

Total Points SF36



tail] = 0.0014, p [two-tail] = 0.0027; see Fig. 2), also of

• The ability to concentrate and

Fig. 4: Overall, the evaluation of the subjects was positive.

the subjective assessment of physical health queried by the SF-36 (p [one-tail] = 0.0074, p [two-tail] = 0.0147; cf. Fig. 3, p. XX) and the total points of the SF-36 (p [one-tail] = 0.0037, p [two-tail] = 0.0075; cf. Fig. 4, p. XX).

In the course of the SF-36 evaluation, the categories mental health (p [one-tail] = 0.0296 [significant], p [two-tail] = 0.0591 [not significant]), general health perception (p [one-tail] = 0.0309 [significant], p [two-tail] = 0.0619 [not significant]) and digestion (p [one-tail] = 0.0477 [significant], p [two-tail] = 0.0955 [not significant]) showed less significant improvement.

Non-statistically significant changes were found in the following categories of the questionnaire: limited physical role function, limited emotional role function, vitality, social function, physical pain. Changes in the senses of smell, taste, hearing, memory and tinnitus were also not statistically significant.

Subjectively perceived changes in symptoms

The following changes in symptoms were described from a subjective point of view:

- The sense of smell and taste was described as having a slightly improved tendency.
- Fatigue was reported as mostly improved.
- Sleep requirement and quality was described as slightly to significantly improved.

memory were reported as tending to be slightly better.

- Dizziness was no longer reported.
- Coughing was no longer present in most of the subjects.
- Shortness of breath on uphill walking or exertion were described as improved.
- Pain, including headache, was reported as significantly improved in most subjects.
- Pressure on the chest during exertion was no longer described by any test person at the end of the treatments.
- Palpitations and cardiac arrhythmias were improved, as were previously elevated blood pressure values.
- Hair loss was reported as decreasing, nail changes as unchanged.
- Menstrual cessation and increased perspiration had not recurred.
- A new snoring that had occurred in the course of the illness had persisted.
- Psychological changes in terms of increased sensitivity and emotional withdrawal were described as regressive.

Changes in physical osteopathic findings

From a physical, osteopathic point of view, the following could be determined in the subjects:

- Increased kyphosis of the thoracic spine with apex Th4 was observed as reduced or no longer present.
- Increased muscle tone in the cervico-thoracic transition area was mostly

normotonic.

- Increased tension in the ventral bowstring area was perceived as significantly reduced to absent.
- Bone hardenings in the back of the head and in the transition area to the cervical spine were palpated as being softer.
- Increased tension/hardness in segment C3/4 was no longer palpable in most subjects.
- The primary osteopathic fascial listening still led to the areas of the lungs and cranium, but this was less pronounced in both cases after the treatments.
- The lungs were perceived as more fluid / less condensed and with better expansion.
- Cranial impressions generally tended to remain more on the right than on the left, all cranial and dural perceptions remained the same with regard to the area compared to the initial assessment, but were consistently felt to be softer and more fluid.
- A previously perceived tension in the area of the pons cord tract was no longer found.
- Firmness and tension in the remaining nerve areas were also significantly reduced on palpation, only the cranial Nn. olfactorius (I), trigeminus (V) and vestibulocochlearis (VIII) still showed somewhat increased tension.
- Hardening and inelasticity of the palpable large vascular nerve cords were palpated as softer and more elastic.
- All visceral areas showed improvements in findings.



All perceptions listed here were subjective impressions based on my professional training and further education and including my personal professional experience, but without guarantee of completeness or correctness.

Discussion

Bearing in mind the original hypothesis of this pilot study, the statistically significant results obtained point to an improvement in the state of health of this group of patients through osteopathic treatment. The techniques used in the study are based on the osteopathic training modalities of the Osteopathie Gesellschaft Deutschland [22], the Osteopathie Institut Österreich [23], the visceral training according to Jean-

Pierre Barral [24] and the CranioSacral Therapy according to Dr. John Upledger [25]. Considering this, the result of this pilot study cannot be automatically transferred to comparable results when using other osteopathic training courses.

Limitations of the work

The limitations include the lack of a control group, a small group of subjects with an unbalanced gender and limited age distribution, and a relatively short treatment series. There was no standardized control examination of the initial physical osteopathic findings and osteopathic changes in findings by independent inspectors or medical imaging methods.

Therefore, the results of this study cannot necessarily be transferred to larger patient groups.

Possible physiological background of the mode of action

It is now assumed that the initial infection occurs primarily through aerosol inhalation via the nasal mucous membranes, to a lesser extent the pharynx and even less via the entry portal of the mucous membranes of the eyes [26]. The virus reaches the interior of the cell via ACE-2 receptors in the cell membrane, where it multiplies and ultimately leads to cell death of the affected cell [27]. The pathogen then spreads via the direct cellular path along the olfactory pathway, the bloodstream and also via the CSF [28]. The infectious aerosol also reaches the area of the respiratory tract and lungs through inhalation [29], which initially tends to produce the picture of acute viral pneumonia with strong edematous components, with subsequent fibrotic tissue scarring with lung hyperinflation and impaired diffusion. To a lesser extent, virus distribution appears to occur directly through the gastrointestinal tract [30].

Since the virus has been shown to circulate in various circulatory systems, it has now been confirmed several times that the infection continues to spread systemically [31]. In the vascular system [32] inflammation with subsequent fibrosis of the vascular endothelia has been demonstrated. In the course of the inflammatory reaction increased thrombus formation was noted in the affected area. These changes and thrombus formation seem to be able to

affect the vascular structures of all parts of the body. An increased blood pressure caused by the arterial vascular changes has been described. In the cardiac area [33], inflammation of the heart muscle and pericardium with the corresponding acute symptoms, but also subsequent complications such as cardiac arrhythmias have been observed. The parenchyma and the supplying vascular system of various organs [34] (lungs, heart, liver, pancreas [35], kidneys, testicles) were described as being affected and damaged by the infection, with the corresponding subsequent functional impairment of the corresponding organs.

If this damage is severe enough, from the current perspective and with regard to the current study situation, there is the possibility that a certain residual change will remain, which could at least be partly responsible for the prolonged symptoms after the acute illness with COVID-19.

Based on the results of my osteopathic findings and the focus of treatment during the treatment series, I suspect possible reasons for the positive development in the subjects of this pilot study to be an improved elasticity and fluidity of the treated tissues, which were able to function better due to the reduced restrictions. This improved elasticity and fluidity could have been achieved through direct treatment of the areas and their fascial connections but also maybe because of an improved arteriovenous and nerve supply situation.

Possibly a large part of the success of the pilot study was due to an increased elasticity of the vascular system and the resulting better supply situation for the musculoskeletal, organ and nervous systems, which was particularly noticeable by the subjects and measurable during increased physical stress. The normalized blood pressure of a person who had suffered from high blood pressure after the COVID-19 illness could also have come about through this mechanism.

This declaration represents my purely personal opinion and assumption and would have to be scientifically checked for correctness in further studies.

Conclusion

In view of the large number of people infected with the SARS-CoV-2 virus

worldwide and the high percentage of those affected who appear to suffer from prolonged impairments, a lot of energy will have to be invested in research into the causes and treatment strategies for this group of people in the future. This, on the one hand, to achieve relief for the condition of the individual, but also to lessen the strain on health and pension systems in future, to improve the ability of these people to work and thus to promote the economy. There is no doubt that the limitations of this pilot study mentioned in the discussion make further studies and peer reviews on the subject necessary to scientifically validate the findings.

Nevertheless, the statistically significant results presented here indicate that in patients with prolonged symptoms after a COVID-19 infection, osteopathic treatment could be a very useful addition to their basic medical care.

Keywords: *osteopathy, post-COVID-19, Long-COVID, Research, Infection, COVID-19*

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Sabine Foster-Garn
BHSc DO-BVO

Born in Vienna, Sabine Foster-Garn runs her own physiotherapeutic and osteopathic practice in Lower Austria. Her professional work focuses on diseases of the musculoskeletal system, nervous system and visceral system in adults and in pediatrics. In the course of the pandemic, this resulted in the additional focus on osteopathic treatment of long-COVID patients.

Sabine Foster-Garn is an instructor for neural mobilization according to Barral at the Barral Institute Austria and International.

Contact:
Practice for Physiotherapy and
Osteopathy
Rosenberger 41

A - 2123 Unterolberndorf
office@physio-kreuttal.at
<https://physio-kreuttal.at>

CO.med December | 2021