

INTRODUCTION TO AQUATIC OSTEOPATHY
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ABSTRACT

A qualitative research study was conducted to describe how it is possible to practice osteopathy in an aquatic framework while respecting the fundamental laws of this manual medicine. Experimentation was done using the main therapeutic tools of traditional osteopathy in a warm water environment.

We first identified the differences in body reactions to osteopathic techniques in a therapeutic pool. To explain these differences, we used the physics principles of hydrotherapy as well as the psycho-emotional effects described in the literature. The following observations and recommendations were noted: The description and sorting of essential fulcrums needed for the practice of aquatic osteopathy, the adaptation of six therapeutic tools, the elaboration of a treatment methodology specific to the aquatic environment, and the development of a new therapeutic tool : the "Undulation".

In conclusion, it is apparent that the aquatic environment offer numerous advantages that greatly outweigh the disadvantages. The theoretical basis of aquatic osteopathy on which this descriptive paper was based could serve as a reference for future research in this area.

INTRODUCTION

Even though many osteopaths have experienced some form or another of osteopathic treatment in water, Marie Panier D.O., was the first to imagine specific adaptations of an osteopathic treatment in a pool. In 1998 she asked the author of this paper to be part of a research project on the adaptation of the therapeutic principles of osteopathy in the aquatic environment.

THE ADAPTATION OF THE THERAPEUTIC TOOLS

It was not long after we started experimenting Osteopathic techniques in water that we realized how well most patients responded to treatments in this environment. The first questions that we asked ourselves were why and how do osteopathic techniques function in a warm water environment? We then started a review of the literature in hydrotherapy and in aquatic therapy in general, which explained some of the results that we were witnessing.

GOAL OF RESEARCH PROJECT

The aim of this research was to adapt the basic therapeutic tools^A of osteopathy in a warm water setting to enable us to describe how it is possible to practice osteopathy in this framework, all the while respecting the basic principles of traditional osteopathic medicine. In order to achieve this aim, we experimented with many different types of techniques in a warm water pool: Muscle Energy, Strain Counter Strain, Myofascial release, Thrust and Cranial techniques etc... We noted the differences in the responses of the patient as compared with the usual on-land "traditional osteopathy" treatment. Six (6) widely used osteopathic therapeutic tools were isolated in order to identify observation parameters. Having completed this part we experimented many different osteopathic techniques on ourselves while video-taping these sessions. After the sessions, we reviewed the films using the observation parameters to precisely describe how to adapt the techniques and to explain some of the differences in body reactions.

THE USE OF FULCRUMS IN AQUATIC OSTEOPATHY

From this analysis it became clear that the use of therapeutic fulcrums in water is very different than in on-land treatment and becomes of primary importance in Aquatic Osteopathy. Definition: "A fulcrum is a reference in space around which the body reorganizes itself during a "strain release" correction. It is a geometric location needed to create the essential equilibrium which then diffuses the effect of the therapeutic act in all directions in space"¹. Without a fulcrum, no correction can take place. The exact point in time at which the fulcrum is used and the type of fulcrum used appears to make a great difference. The aquatic environment offers the advantage, and sometimes disadvantage, of not providing us with the usual fulcrum found in a gravitational, on-land setting. This absence of fulcrum allows:

- liberty of movement in 3 dimensions.
- the effect of a local strain release to diffuse more rapidly in the surrounding tissues, thus making the treatment more global.

Although the previous aspects are of great advantages, it is at times necessary to re-create new fulcrums in order to:

- obtain the required degree of precision for certain manipulations.
- supply the body with a reference point around which the body will re-organize itself (obtaining the actual strain release).

^A We define therapeutic tools as being the basic therapeutic and diagnostic tools used to build-up the techniques utilised in osteopathic medicine.

- allow the therapist to work with their entire body instead of only using the strength of their arms. In traditional settings, osteopaths should always use their whole body to induce a correction rather than just using their arms or hands. Since our body weight is diminished due to buoyancy in water, we are easily tempted to only use our arms. This can generate some disadvantages. Not only does it create an unpleasant sensation of touch for the patient but the therapist also gets tired more quickly. That leads to a decrease in efficiency and goes against the principle of ensuring the patient's comfort during the session.

THERAPEUTIC FULCRUM

There are 5 basic types of Fulcrum in water:

Fixed: This type of fulcrum allows the stability and precision required for certain types of techniques. For example: pool walls, pool steps.

Semi-mobile: these fulcrums allow the body to move freely while making it possible to apply the necessary tissue tension required during the corrections. Example: Therapist's body parts: hips, hands, knees ...

Mobile: The floats not only allow the patient to stay afloat but they also bring a necessary stability while allowing the body movements in 3 dimensions. This condition becomes of great advantage during myofascial release techniques.

Liquid: Water itself, its viscosity and hydrostatic pressure and buoyancy, provide a certain fulcrum. These conditions are even more present during dynamic corrections and in ocean water.

Internal: There seems to be an advantage in exploiting an internal fulcrum in certain types of techniques. According to Darraillans ², "It is as if the healing comes from within the patient instead of being imposed on him. This contributes to give back the responsibility of the healing to the patient". Examples: the 5th rib, for pericardium manipulation techniques. Sutherland's fulcrum at the junction of the falx cerebri and the tentorium cerebelli, used in cranial techniques. ³

TREATMENT METHODOLOGY

The following methodology was elaborated from our clinical experimentation and from the precious collaboration of Bernard Darraillans D.O., a French Osteopath who has in the past, experimented with Aquatic Osteopathy. An Aquatic Osteopathy treatment is part of a whole treatment plan and as such, should always be preceded by a standard on-land evaluation. This preliminary evaluation allows the therapist to detect certain types of dysfunctions, which are harder to treat in water.

Steps of a treatment session:

A) Gradual introduction into the pool

A verbal exchange with the patient partially immersed helps the patients familiarize themselves with the environment and the therapist in preparing the session plan.

B) Installation of floats

Both the therapist and the patient enter the pool and the osteopath fits the neck float. The therapist then brings the patient's body to an horizontal position by gently stabilizing the trunk with one hand at the scapular level and bringing the pelvis to the surface with the other hand underneath the sacrum. The osteopath then fits the ankle floats. It is then very important to observe the spontaneous posture taken by the body because it often reveals the mechanical dysfunctions against which the body is fighting in gravity. This posture is usually a good indication of where to start searching for the primary Osteopathic lesions.

C) Treatment

An Aquatic Osteopathy treatment takes place in water that is at body temperature. The treatment should take place in a pool with minimum depth of 1 metre and a minimum surface of 10 square metres in order to be able to move the body in all directions. A typical session lasts anywhere between 40 to 50 minutes. Needless to say, the evaluation and treatment vary depending on the patient's condition and symptoms. After evaluation and testing of the targeted areas, we normally follow the same methodology normally used in traditional osteopathy, that is: The treatment and correction of the following types of lesions sorted-out by priorities. The degree of importance being dictated by the potential impact of these lesions on the body: Compressions, Non-physiological lesions, physiological lesions (restrictions). For integration purposes it is strongly suggested to end a treatment session with "Undulation" techniques.

D) Return to gravity

The therapist removes the ankle floats while slowly accompanying the pelvis to a vertical position. We then remove the neck float and instruct the patient to slowly walk around the pool at shoulder immersion level. This step helps the patient to re-integrate the vertical position.

E) Coming out of the pool

This step is very important. Darrailans ², notes that in gravity, the intra-thoracic cavity pressure is less than the intra-abdominal pressure, which is itself less than the pelvic pressure. During horizontal immersion these pressures become more or less the same, providing an inhibition of baro-receptors of these areas. It then becomes even more important that the return to gravity be progressive, so that these receptors can gradually restart to function. Otherwise, chances are that the body will go back to its old adaptation patterns and that we might lose the effects of the corrections made during the treatment. The following steps are suggested for a better and slower return to gravity:

- Patient sits in pool steps, for a few minutes at shoulder level immersion.
- Patient then goes-up one or two steps to mid-thoracic level for a few more minutes.
- Patient slowly exits the pool and lies down in a long chair for five minutes, which helps the thoracic diaphragm to return to its normal functions.
- Finally, patients should always shower at warm water temperature, not only for the cleansing effect against the chemicals on the skin but also to normalize their body temperature. Note that after 45 minutes in body temperature water, the patient will slowly dehydrate and should drink as soon as possible after the treatment.

THE THERAPEUTIC TOOLS

The following are definitions of the tools experimented during the first phase of the research.

COMPRESSION / DECOMPRESSION:

Compression: These techniques are mainly used in joints corrections. The goal of this kind of technique is to regain joint surfaces congruence. It is an indirect type of technique as we first start by compressing even further the implicated surfaces. It is defined as the act of compressing matter or the implicated structures against each other. After this is done, we must accumulate all rigidity parameters (flexion/extension, rotation, sidebending) in order to bring the strain tensions back in one single spot. Then we wait until there is a still point^B

^B Still point: A point in time during which there is a silence (tissue immobility). During that period the tissues get reorganized and accumulate the necessary strength to release the strain.

followed by the release of the strain. If the therapist intends to release the peripheral tissues of the joint, they then must complete this first stage with a decompression.

Decompression: During this phase we decompress even further the joint surfaces by creating a reciprocal tension between both surfaces. The aim is to recover resilience and the Primary Respiratory Mechanism in the tissues.

INDUCTION:

Mainly used in cranial and visceral manipulations, an Induction is a suggestion or proposition to a structure to move towards its facilitated area while “keeping” the same amplitude and axis that the structure normally has during its inherent motion (motility). Accentuation of this suggestion leads the structure to an equilibrium point, which brings about a myofascial release⁶.

RECIPROCAL TENSION (TENSING):

In applying this concept the two anatomical structures are separated in order to trigger a reflex response from them. It is NOT aimed to stretch muscle fibers. By this process the Osteopath searches for an easy zone of maximum resilience called “springing effect” which allows the body tissues to re-organize themselves around the fulcrum provided by the osteopath.

OSCILLATION / UNDULATION:

Mainly used in joints manipulations, the goal of the Oscillation is to normalized facilitated spinal segment. It is a rhythmic mobilization like the oscillation of a pendulum *within the elasticity of the tissue tension*. The notion of elasticity being defined as the zone within which the tissues are the nearest to their physiological limits of amplitude, while maintaining their springing capacity¹⁴. In water, an Oscillation becomes an "Undulation". The absence of fulcrums and of gravity do not allow the innate rhythmic see-saw motion of the Oscillation. The properties of water lead the adaptation of the Oscillation in becoming an "Undulation". As compared to the standard Oscillation, the Undulation can be induced in all 3 dimensions of space thus providing a more global treatment effect. It also improves body fluid circulation and seems to reduce the time taken to obtain a strain release when it is used at the end of a technique.

PUMPING:

Muscular pumping: is accomplished by a rhythmic alternation between, tensing of both ends of a muscle within the elasticity of its fibers and *partially* releasing that tension. The aim of this tool is to increase body fluid (Blood, Cerebrospinal fluid, and Lymph) circulation, and not to stretch the fibers.

Articular pumping: is performed by compressing or tensing the bones composing the joint. Pumping is then performed by *partially* releasing the compression.

THRUST:

Mobilization with an impulsion (osteo-articular adjustments). It is a mobilization of low amplitude and high velocity within the physiological limits of the joint⁷.

ANSWERING THE RESEARCH QUESTION

How is it possible to transpose the therapeutic principles of Osteopathy into the aquatic environment, while respecting the fundamental laws of this medicine? Part of the answer to this question lies in the application of the following elements.

- by studying the physics of water and immersion and understanding their impact on the whole person.
- by considering the importance of the psycho-emotional^{12,13} effects of warm water on the patient.
- by re-creating the adequate and necessary fulcrum to obtain a strain release.
- by getting the osteopath becoming accustomed to working with their whole body even while being out of gravity.
- by adapting the osteopath's palpation to the new environment offered by water.
- by adopting a new treatment methodology in order to respect the effects of the aquatic environment on the body on both the patient AND the therapist.

RESPECT OF THE FUNDAMENTAL LAWS OF OSTEOPATHY

In order for Aquatic Osteopathy to develop further, it was important to ensure that it respects the fundamental laws elaborated by Dr A.T. Still, D.O.

The role of the artery is absolute: The properties of warm water even increase this role as blood circulation is increased in warm water⁸. The "Undulation" tool increases all body fluid circulation, blood, lymph and Cerebrospinal fluid.

Auto-regulation capacities of the body: During immersion, the patients are more in contact with their internal state as the general metabolism decreases by 10%⁹. The external environment being stable (usually at 37° C), the body does not need to adapt to the usual unstable external environment and it becomes easier for the patients to maintain their biochemical functions.

Structure governs function: During immersion, the musculoskeletal shell loses its predominance and changes its behavior. The visceral content suddenly grows in importance and becomes more accessible². Most organs then become easier to palpate in water and are easier to isolate. In light of that, it is permitted to think that function becomes predominant during immersion.

PROS AND CONS

The following list constitutes a summary of what we considered to be the most important advantages and disadvantages for the practice of Aquatic Osteopathy.

ADVANTAGES OF THE AQUATIC ENVIRONMENT

- ❑ The absence of gravity provides an environment that allow the therapist to re-create new fulcrums.
- ❑ Warm water has analgesic properties⁹.
- ❑ Warm water has a powerful releasing effect on soft tissues⁹.
- ❑ Water pressures greatly facilitate the circulation of body fluids⁸.
- ❑ The aquatic framework facilitates reciprocal soft tissue equilibrium¹⁰.
- ❑ Water facilitates perception of the patient's body schema¹⁰.
- ❑ Warm water is a catalyst for the expression of unconscious emotions¹¹.

- Warm water is a securing and maternal environment that invites oneself to let go ¹¹.

ADVANTAGES OF AQUATIC OSTEOPATHY

- Absence of fulcrum and of gravity gives the body the possibility to express the lesion against which it continuously fights in gravitational settings. Our constant battle against gravity generates adaptations and dysfunctions. In water, since our body does not reply to gravity, the primary lesions appear more spontaneously. This provides us with an easier access to primary lesions, because fascia does express itself more freely in 3 dimensions ¹⁰.
- The therapist sees the extent of the obtained release more easily ¹⁰.
- The absence of fulcrum and the minimized importance of the musculoskeletal shell, facilitates the isolation of a particular area, which contributes to maximize visceral individuality during treatment ².
- Because there is a constant external environment, we have a better contact with the internal state of the patient, thus an easier access to primary lesions ².
- The absence of fulcrum allows the body to spontaneously find the ideal reciprocal tension to obtain strain release ¹⁰.
- In the aquatic framework, the strain releases appear to happen more rapidly and with greater amplitude. This could be explained by a better access to the internal state and the facilitation of body fluid circulation provided by this environment ¹⁰.
- Visceral palpation is facilitated in water. The aquatic framework could therefore become a good learning tool for undergraduate students ¹⁰.
- Since we can work more easily in 3 dimensions, the treatment effects are thought to be more global ¹⁰.
- The "Undulation" tool, contributes to diffuse the effect of a strain release throughout the body ¹⁰.
- The Undulation tool enables re-integration of a newly normalized area with the rest of the body and is, as such, an excellent integration tool ¹⁰.
- There seems to be an increase in intra-articular pressure which facilitates joint decompression but which makes joint compression more difficult ¹⁰.
- Hydrostatic pressure facilitates pumping techniques ¹⁰.

DISADVANTAGES

- In a private practice situation, the criterions needed to practice Aquatic Osteopathy are sometimes difficult to combine. Important factors to consider for a private practitioner are, the costs associated with a private and isolated pool, as water temperature and quality have to be controlled.
- Being in a weightless situation, the osteopath loses the advantages of his/her body weight when performing the techniques.
- The fact of being in water demands an adjustment of our palpation.
- Certain thrust techniques are harder accomplished. The essence of a thrust technique relies on velocity, precision and proper accumulation of rigidity parameters. Most of the properties of water go against these principles: The buoyancy, hydrostatic, hydrodynamic pressure and viscosity of water considerably decrease the speed at which a manipulation can be done. It is also difficult to accumulate rigidity parameters because as Juschmes ⁹ described it, in warm water muscles become hypotonic.

Conclusion

In light of these preliminary results, it is apparent that warm water is a favorable environment for an osteopathic treatment and that the advantages outweigh the disadvantages.

We have demonstrated that it is possible to adapt most osteopathic techniques into an aquatic framework while respecting the basic principles of traditional Osteopathy. Even though we have extensively studied the physics and physiology of immersion we still believe that these laws alone can not fully explain all the encountered reactions of the patients. Co-incidentally, I hope that this paper will trigger an interest for further clinical research in the area of Aquatic Osteopathy.

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