

## **Effect study of hydromassage ( Wellssystem Medical Hydrojet ) on fibromyalgia syndrome patients**

In spite of the fact that in health care a discussion has been going on for years among physicians and paramedics whether fibromyalgia syndrome (FMS) actually exists or not, it has been officially recognized by the World Health Organization in 1992. Physicians and paramedics who do believe in the existence of fibromyalgia syndrome realize that patients have to contend with real symptoms and limitations.

I consider myself to be among this group of paramedics that take the symptoms of FMS seriously and therefore I think it is very important to keep looking for the right treatment for this group of patients.

### **Fibromyalgia Syndrome**

Fibromyalgia is a chronic disease of the soft tissue of the locomotor system and therefore it is a form of soft tissue rheumatism. The symptoms connected to fibromyalgia are muscle pain, stiffness, fatigue, sleeping disorders, headaches, a feeling of swelling in the joints, depressions, fear and extreme skin irritation. Just like other forms of rheumatism in approximately 80 % of the patients, symptoms worsen by cold, damp weather, heavy physical efforts or underperformance and static activities such as remaining seated for a long time. (Backstrom Rubin 1992)

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FMS related symptoms	number of patients (%)
Generalized pain	100 %
Fatigue, morning stiffness	80 %
Sleeping disorders	65 %
Headaches, feelings of fear	55 %
Paresthesias, subjective feeling of swelling in the joints	50 %
Irritable Bowel Syndrome, dysmennorrhoea	40 %
Feelings of depression	34 %
Raynaud's phenomenon, dry eye symptoms, female urethra syndrome	12 %

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### **Diagnostics, epidemiology and course**

The diagnosis fibromyalgia syndrome can be made on the basis of a case history and a physical examination by method of the American College of Rheumatology (ACR). Starting point here is the fact that the patients have had at least 3 months of generalized pain in 11 of the 18 tender points above as well as below the waist, on the left side as well as on the right side of their bodies.

An estimated 400.000 people in the Netherlands suffer from FMS and 90 % of them are female, in the age group from 25 up to 45 years of age ( Wolfe e.a. 1995)

The course in FMS is gradually progressive or at any rate stable over the years.

This makes recovery extremely rare.

## **Treatment**

So far, it is not clear which treatment produces the best effect for FMS patients. Moreover, therapies that prove effective with some FMS patients are not so effective with other patients. We can make a classification in medicinal and non-medicinal therapies. Medicinal therapies are: NSAID, paracetamol, sedatives and certain antidepressant drugs. These drugs have a temporary positive effect or a supportive role with a small part of the FMS patients. The non-medicinal therapies are: specific kinesotherapy, physiotherapy, TENS, CVT, acupuncture and cognitive behavior therapy. In most FMS patients the symptoms decrease over some hours to some days after treatment.

Another hopeful possibility in the treatment of FMS is the health travel to countries with a hot and dry climate.

## **Pathogenesis**

We still do not know what causes fibromyalgia syndrome. In all probability, it is a neurohormonal disturbance, which causes changes in the serotonin, substance P, catecholamine, growth hormone and endorphin metabolisms.

Apart from sleeping disorders, structural and hypoxic changes in the skeletal muscle tissue could also explain the cause of FMS.

## **Reason and purpose of this study.**

Since 1 ½ years, I am using the Wellssystem Medical Hydrojet (hydromassage) in my practice as pre-treatment or after-treatment with some of my patients. Experience shows that patients react quite well to this hydromassage. Therefore, the purpose of this study is to measure the effect of hydromassage on the symptoms of FMS patients. I have tested this by comparing the following 4 variables: pain, stiffness, fatigue and sleeping disorders, during 10 weeks in 21 FMS patients should the results of this study be positive then this could be a good reason to start up this study scientifically in cooperation with a rheumatologist.

## **Patients and method**

In all 21 patients cooperating in the study the diagnosis fibromyalgia syndrome was made by a rheumatologist. Among the testees were 20 women and 1 man. The age of the patients was between 26 and 64 years, of which 7 patients did not use any medication.

By way of hydromassage (Wellssystem Medical Hydrojet) all patients were treated during a period of 8 weeks, 2 times a week, in such a way that never 2 treatments were done on consecutive days. The FMS patients had to fill out a form daily, at the end of each day at the same time and in doing so giving grades by means of a scale of points between 0 and 10 for the degree of pain, stiffness, fatigue and sleep. See measuring instruments (a) and (b).

All patients filled out this form daily a week before the first treatments as well as a week after the last treatments. Thus, I was able to evaluate the condition of their starting situation and their end situation, before and after the study. In order to conduct a study as objective and perspicuous as possible the FMS patients were not allowed to start a new form of therapy during this study. All forms of therapy, which the FMS patients were conducting before this study, they had to continue doing.

## Measuring instruments (vas scale)

### (a) Pain

Give a grade for the degree of pain you experienced on this day.

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<b>none</b>	<b>moderate</b>	<b>severe</b>								
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>

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For the variables stiffness and fatigue the same kind of scale was used as for pain

For the variable sleeping disorder, use was made of the following scale.

### (b) Sleep

Give a grade for the quality of sleep of the past night

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<b>good</b>	<b>moderate</b>	<b>very bad</b>								
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>

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## The Wellssystem Medical Hydrojet

The Wellssystem Medical Hydrojet is a form of hydrotherapy where patients lie on their back on a soft rubber mat. By way of 2 jets of hot water, the whole body is massaged in a pulsating manner. The strength of the jet can be regulated and also the painful areas or muscle groups the patients wish to have massaged are programmed by manual control. The Wellssystem Medical Hydrojet is filled with about 400 liters of water. The heat of the water (34 degrees Celsius) relaxes the whole body and helps the jet to penetrate deep into the muscle tissue. This Wellssystem Medical Hydrojet is used frequently in particular in Germany by physiologists, physical therapists and chiropractors for pain control in back troubles. The heat in combination with the powerful water jets creates a quick reduction in the muscular tonus, a relaxation of the connective tissue, improvement of the local metabolism and an accelerated drainage of waste products through the venous system and the lymphatic system.

Because of the powerful and relaxing depth massage, an attenuation occurs of the autonomic nervous system, which has a positive effect on the internal organs.

**Source: Dr.med.Ulrich Frohberger, Orthopedist/Sports physician in Münster**

In 1995 the Bad Oeyenhausen clinic (650 beds) introduced a new form of physiotherapy. Since February 1995 this rehabilitation center makes use of 4 Wellssystem Medical Hydrojets, which offer an innovative form of patient treatment.

The Bad Oeyenhausen clinic is active in 3 main fields:

- Rehabilitation for chronic orthopedic disorders
- Cardiovascular disorders
- After-treatment for degenerative rheumatic disorders

As a result of the increasing demand for optimal patient care and a versatile treatment, this Wellssystem Medical Hydrojet has been in use now for 6 years already in this rehabilitation center because of the effective massage qualities and the low costs.

At this moment, the Wellssystem Medical Hydrojet is in use in Germany in 5 hospitals and in over 40 rehabilitation centers.

**Source: Dr. Med. H.U. Hinrichs, Medical director Bad Oeyenhausen clinic**

## Results of the study

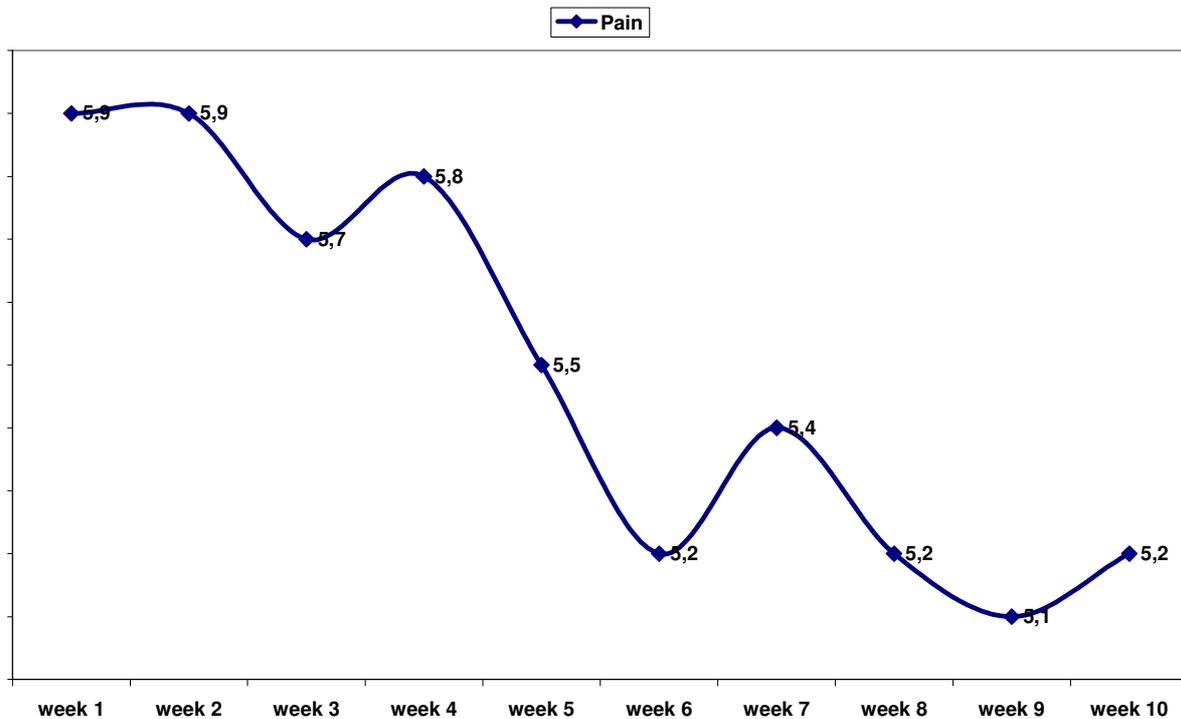
Per week, the figures of the degree of pain, stiffness, fatigue and quality of sleep per patient have been added up after which the average is calculated. The average values per patient have been added up, after which again an average was calculated of the total population of FMS patients.

In week 1 and in week 10 no hydrojet treatment took place.

**(Table 1) Average degree of pain in 21 FMS patients a week**

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10
5.9	5.9	5.7	5.8	5.5	5.2	5.4	5.2	5.1	5.2

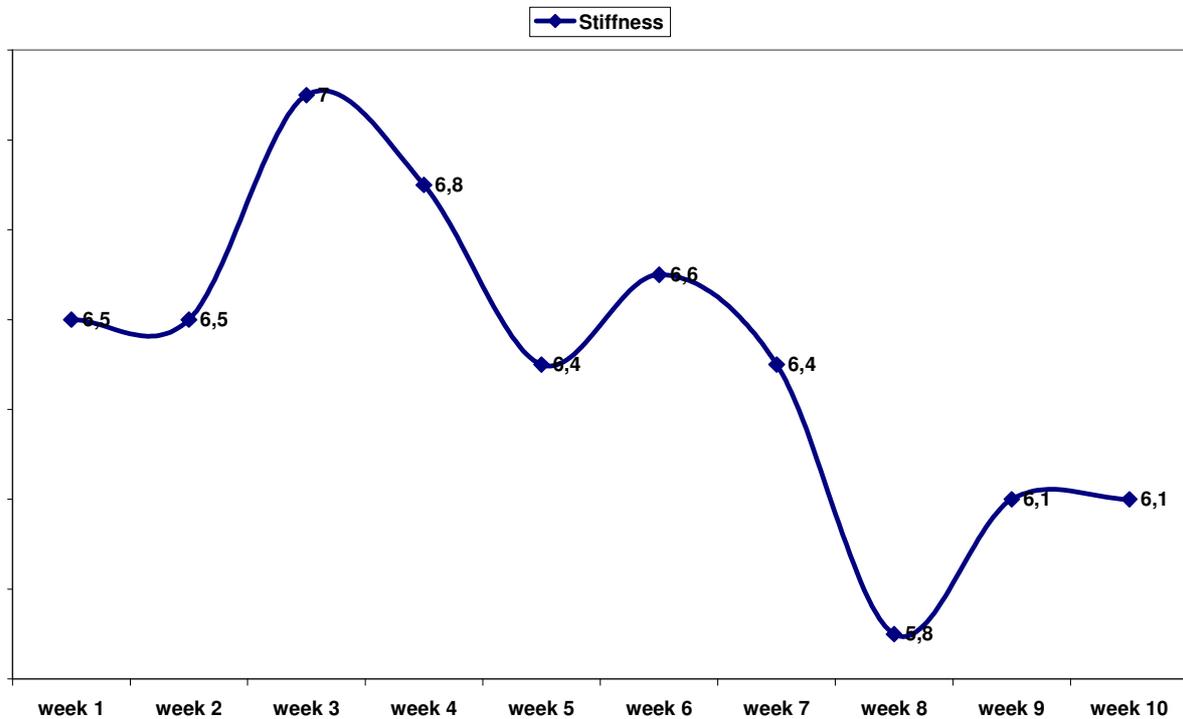
Change in terms of percentage from week 1 with respect to week 10 = **-/- 11.86%**



**(Table 2) Average degree of stiffness in 21 FMS patients a week**

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10
6.5	6.5	7.0	6.8	6.4	6.6	6.4	5.8	6.1	6.1

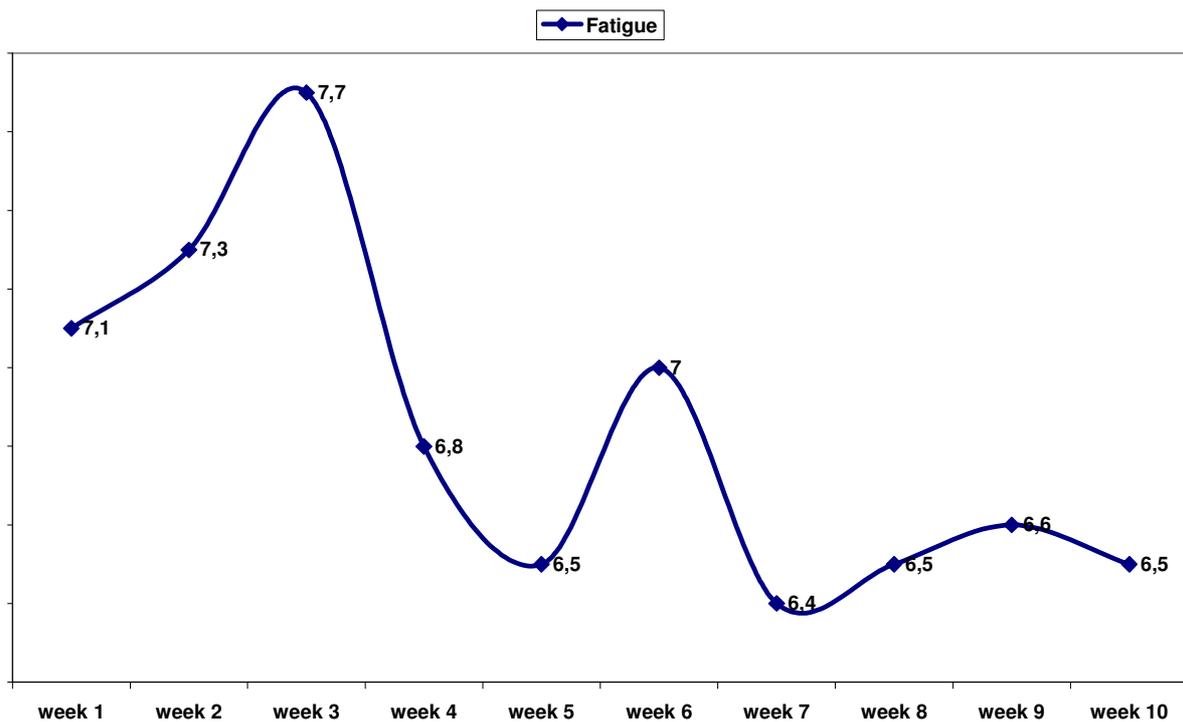
Change in terms of percentage from week 1 with respect to week 10 = -/- **6.15%**



**(Table 3) Average degree of fatigue in 21 FMS patients a week**

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10
7.1	7.3	7.7	6.8	6.5	7.0	6.4	6.5	6.6	6.5

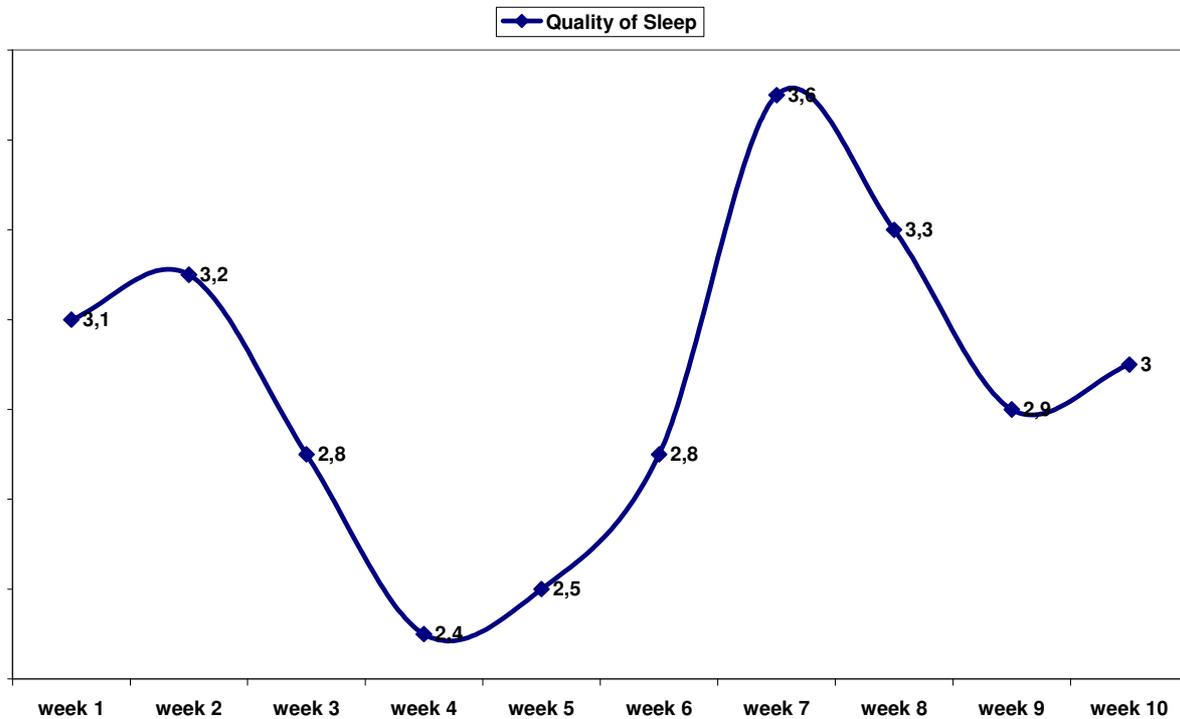
Change in terms of percentage from week 1 with respect to week 10 = -/- **8.45%**



**(Table 4) Average quality of sleep in 21 FMS patients a week**

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10
3.1	3.2	2.8	2.4	2.5	2.8	3.6	3.3	2.9	3.0

No change in terms of percentage from week 1 with respect to week 10 =  $\pm 3.23\%$



### Conclusions of the results

The conclusions that can be drawn from this study are that there is a visible decrease in particular of the pain sensation, the stiffness and the fatigue. The quality of sleep even deteriorated somewhat, in comparison with the first week.

When we look at the degree of pain, then this is the part where the greatest change in percentage took place with respect to all other measured variables.

In most FMS patients that were examined, pain is also the most important disorder. It is remarkable that the FMS patients who do not use medication relatively showed the greatest decrease in pain during this study. In addition, the relatively younger FMS patients (up to the age of 40) who are quite active in daily life also caused a significant decrease in the weekly average pain. The FMS patients who were somewhat older (aged 40 and over) and were using different medications did not generally book good results within the scope of this study. Furthermore, it was remarkable that the FMS patients who experienced the hydro massage as unpleasant did not experience any decrease in pain, stiffness or fatigue.

Personally, I believe that the decrease of pain has a direct influence on the degree of stiffness and fatigue. Therefore, you could say that a FMS patient who has less pain will be able to move somewhat easier too. Pain takes a lot of energy from the body. This may be an explanation for the fatigue sensation that almost all FMS patient have when the pain is severe. In my opinion, the decrease in stiffness and fatigue in FMS patients is a logical consequence of the decrease in pain.

Regarding the quality of sleep there is a relatively small deterioration during the 10<sup>th</sup> week with respect to the 1<sup>st</sup> week. During the other weeks, we also see that sleep improves or even deteriorates considerably. The question is if we may draw conclusions from this with respect to the study. We can assume that the quality of sleep is not only influenced by the 3 other measured variables. Other factors having influence on the quality of sleep are for instance: psychological factors, the duration of sleep and the influence of the partner during the night's rest. Because these factors are not taken into account during the study, I do not wish to draw conclusions from the result. All the same, I was curious for the results.

The fact that the variables pain, stiffness and fatigue clearly react positively on hydrotherapy with the Wellssystem Medical Hydrojet means that in a certain group of FMS patients, namely the group that does not use medication or little medication and are active in daily life, these variables are well treatable. In order to be able to generalize the results of this effect study this will have to be investigated scientifically. This effect study is the initial impetus to bring this relatively new form of therapy in FMS patients to the attention.

### **My personal experiences with the Wellssystem Medical Hydrojet**

A few years ago, I first came into contact with the Wellssystem Medical Hydrojet (hydrotherapy) during my internship in the Alfa clinic in München. Under the guidance of the Dutch neurosurgeon, dr. Hoogland in cooperation with the physiotherapy department the Wellssystem Medical Hydrojet was used as a supplement to the regular physiotherapy in pre-operative and post-operative hernia patients.

I myself use the Wellssystem Medical Hydrojet as pre-operative or post-operative treatment in particular with the following symptoms:

- Myogenous hardening of the whole back
- Rheumatoid arthritis
- Fibromyalgia syndrome
- Whiplash
- RSI
- Tension headache

I have noticed that the combination of pre-treating patients with this hydromassage has a number of great advantages.

In the first place, the combination of heat and massage of the Wellssystem Medical Hydrojet provides a fast detensioning of the musculature to be treated. Therefore the main treatment is much easier because the muscle tissue is relaxed already, which makes mobilizing the structures, tractions and translations to be treated, manipulations or frictionizing of myogeloses almost go automatically. However, this is not surprising, when you realize that the introduction of the treatment is conditioned for the objective to be achieved.

Another great advantage is that a large part of the massage therapy which I normally perform manually, is now replaced by the Wellssystem Medical Hydrojet.

This pre-treatment or after-treatment makes my profession a lot less stressful since the Wellssystem Medical Hydrojet assists me in effleurage and kneading of a large number of my patients. Some patients are even treated only with this hydrotherapy because they benefit more from this than from a regular treatment. Thus, I have noticed that patients with rheumatoid arthritis and fibromyalgia syndrome indicated themselves that this treatment provided a more positive effect on their symptoms because of the heat and the relaxing effect of this hydromassage. Because the patients themselves can decide by manual control where

and how strong the massage jet treats their body, the Wellssystem Medical Hydrojet is a very effective and precise massage. After all the patient himself can sense very good on which places the jets treat the right pain spots and therefore he can provide the feedback immediately through the extensive manual control system.

An additional added value of the Wellssystem Medical Hydrojet is that I have myself massaged weekly on the Wellssystem Medical Hydrojet, which keeps my body in shape as a preventive and curative measure.

## **Literature**

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