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Review

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DOCTOR ZANDER'S MEDICO-MECHANICAL INSTITUTE IN OPATIJA

MEDICINSKO-MEHANIČKI INSTITUT DR. ZANDERA U OPATIJI

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SUMMARY

At the beginning of the 20th century, there were different kinds of medical institutions in the health and seaside spa resort Abbažia (nowadays Opatija). The Opatija Guidebooks (1904-1914) praised the three sanatoriums and Zander's Medico-Mechanical Institute, which was owned by Dr. Isor Stein. Dr. Zander, who is not well-known today, has been the main topic of the authors' research.

The authors have found out that Dr. Gustav Zander (1835-1920) worked as a teacher of gymnastics, a physician, and a university lecturer about the remedial gymnastics at the University of Stockholm. He constructed several devices which enabled constant and regular movement of individual parts of the human body, as well as certain devices that replaced the manual massage. Zander started his first institute in Stockholm in 1865. People could do exercise using his apparatus. He gained international fame by exhibiting his devices at the International Exhibitions in Brussels and Philadelphia in 1876 and in Paris in 1878. Several Zander's medico-mechanical institutes were established around the world and they were all named after him. There were two hundred and two Zander's Institutes in 1911 when his success and fame reached its peak. Zander's Institute in Opatija was constructed already in 1904 and it was located on the ground floor of Stein's mansion, known as Vila Stein, nowadays Vila Dora.

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The First World War changed the fundamental role of Zander's Institutes and the Great Depression in 1929 destroyed them. It seems the Institute in Opatija closed down at that time too, even though we have not found out the precise date.

The modern fitness studios started to emerge in Europe in the 1950s, a few decades after Zander's medico-mechanical institutes ceased to exist. Many modern professional fitness devices are basically derived from the apparatus that was recommended, constructed and launched into the society already by Dr. Gustav Zander. The authors of this article presume that it was Dr. Zander who already used the methods of physiotherapy and fitness that are generally used today.

Key words: *Abbazia/Opatija, history of medicine, 20th century, Gustav Zander, Isor Stein, medico-mechanical devices*

The Croatian town Abbazia, nowadays called Opatija, used to be the main health and seaside spa resort in the Ex Austro-Hungarian Empire. It used to be visited by some wealthy men including influential celebrities, such as scientists, even Nobel Prize winners as well as some members of the aristocracy [1]. Therefore Abbazia proved to be a convenient meeting place where even emperors (Fig. 1) used to meet during their official visits [2]. As a famous spa resort, Opatija was a suitable place to organize different medical congresses. For example, it hosted the Fourth Balneal Congress of the Austro-Hungarian Empire in 1904, and the Fourth International Congress of Thalassotherapy four years later. Besides attending several scientific lectures and papers the participants could enjoy many side events, such as visiting various medical institutions in and around Opatija. There were the three sanatoriums named after their owners: Dr. Schalk's, Dr. Szegö's and Dr. Mahler's, and there was Dr. Zander's Medico-Mechanical Institute (Fig. 2) which was owned by Dr. Isor Stein [3].

As Dr. Zander is a rather unknown physician today, the authors of this particular article have mainly been interested in the origin of the institute's name and in Dr. Zander himself. They have further been interested in when and why Zander's Institute in Opatija was established, what its therapeutic offer was and how long it had operated there. The authors have tried to find out if Zander's Institutes operated elsewhere in Europe or around the world.

Dr. Jonas Gustav Vilhelm Zander was born in Stockholm on 29th March 1835 and died there on 17th June 1920. He worked as a teacher of gymnastics at the all girls' boarding school for five years. Later he studied medicine at the universities in Uppsala and Stockholm. He graduated in 1864. While he was working as a physician at *Karolinska institutet* in 1865, he opened his first institute in Stockholm where he tested his devices that



Figure 1 The meeting of the Emperor Franz Joseph I with the Swedish king Oscar in Opatija on April 5th 1904. (The Fischinger-Glax family archive)

Slika 1. Susret cara Franje Josipa I. i kralja Švedske Oskara II. u Opatiji, 5. travnja 1904. (Obiteljski arhiv Fischinger-Glax)

he had designed according to the principles of the Swedish remedial gymnastics (*Heilgymnastik*) [4].

In 1877 the University of Uppsala conferred an honorary doctorate in medicine on him. The Swedish medical association presented him with the gold medal for his services to remedial gymnastics in 1892. He became a member of the Royal Swedish Academy in 1896 [4,5].

Dr. Gustav Zander attended the Fourth International Congress of Thalassotherapy (28.-30.9.1908) in Opatija [3].

The bases of the Swedish remedial gymnastics and the Swedish exercise were established by Pehr Henrik Ling (1776-1839). He presented their basic principles in his book *The Basic Principles of Gymnastics (Die allgemeinen Gründe der Gymnastik)* which was printed in Uppsala in 1840. The Swedish gymnastics is based on Ling's finding that organs, the muscles and bones get stronger by physical exercise [6,7].

After the initial success with his gymnastics devices, Dr. Gustav Zander named his building in Stockholm the Medico-Mechanisches Institut. In 1865, there were twenty-seven different devices ready to be

ABBZIA.

Medico-mechanisches

Zander-Institut, 
 Massage, Orthopädie und
 physikalische Heilanstalt



Elektro-, Photo- und Thermo-therapie,
Ersonvalisation und Röntgen-Diagnostik.

Besitzer und leitender Arzt:
U. M. Dr. Isor Stein.

Sommer in Ischl.

Villa Dr. Stein, Abbazia, 5 sonnige
 Zimmer zu vermieten. 

Figure 2 The advertisement for Zanders Institute in the Guide Around Opatija from 1914. (Abbazia. Ein Führer für Kurgäste, 1914)

Slika 2. Reklama za Zanderov institut u Vodičih po Opatiji. (Abbazia. Ein Führer für Kurgäste, 1914.)

used in the Institute. The devices were divided into four different categories: apparatus for active exercise, for passive exercise, apparatus for mechanical action and specialised orthopaedic apparatus. The first category of apparatus was the most important and during a certain period, Zander constructed forty-one special devices [8,9].

Zander's devices were shown on the international exhibition in Brussels (1876) and the World Exhibitions in Philadelphia (1876) and in Paris (1878). These exhibitions brought him international fame [4].

The great therapeutic importance of Zander's medico-mechanical therapy was in the symmetry of performing different exercises as well as in their constant equable repetition[10].

The second medico-mechanical institute was opened in London and it was named after its founder, the Zander Institute. Since then, all the institutes where people were doing exercise using the apparatus constructed by Dr. Zander have been given the same name.

Dr. Zander travelled to New York in 1880 where he started his third institute near the Central park. Later on, several more institutes were built throughout Europe [4,5].

In 1893, there were four Zander's Institutes in the USA, ninety-three in Germany and eighteen in other European countries. Zander's Institute in Opatija was established in 1904.

The development of Zander's Institutes reached its peak in 1911 when there were seventy-nine Institutes in Germany, eight in the Netherlands (*The Medico-Mechanical Equipment of Doctor Zander*), one hundred and one in other European countries and fourteen outside Europe [4,8].

Dr. Isor Stein (1864-?) [14], the owner of Zander's Institute situated in Opatija, described the Institute very accurately in the book called *Abbazia as the Spa Resort (Abbazia als Kurort – Festschrift zum 60. Geburtstag des Prof. Dr. J. Glax)* The establishment of Zander's Institute in Opatija was based on Stein's founding that a good spa resort should offer not only the medical but also additional, contemporary treatment and help, such as physical therapy. Since 1885, Dr. Stein was intensively involved into physical therapy, particularly remedial gymnastics, massage and orthopaedics. His basic aim was to involve these therapeutic disciplines into the regular offer of the spa. According to Stein, the contemporary way of life, basically the spiritual competitiveness and the constant struggle to survive, demand on increasing involvement of an individual which is supposed to start even before the person starts going to school.

Therefore exercise is essential in order to strengthen your body and to gain the results in a very short time [11]. As we can read in the Abbazia Guide, the importance of physical exercise was well known to the physicians at the health resort in Opatija from the very beginning; according to Dr. Oertl's plans they constructed the so called *Teraincurwege*, today known as the walking therapy – people were able to use walking paths at three different levels according to their abilities [12,13].

Dr. Stein had to face some problems before the actual opening of Zander's Institute in Opatija in 1904. The full name of the Institute was The Medico-Mechanical Zander's Institute and the Physical Health Institution of Opatija (*Das Abbazianer medico-mechanische Zander-Institut und die physikalische Heilanstalt*) [11].

It was located in Stein's mansion, known as Vila Dora today [14]. The institute primarily offered medico-mechanical Zander's gymnastics and all the then known and accepted forms of physical therapy. Such were the orthopaedics, the therapy using different kinds of apparatus, the manual massage, the vibration massage, the therapy using hot air, the diagnostics, the therapy using X-rays, treating hyperaemia according to Professor Bier, and work therapy. During the medico-mechanical gymnastics, the apparatus enabled active as well as passive exercise, which meant overcoming the resistance. The exercises on different devices were adapted to every individual according to their ability. It was also possible to set the resistance very precisely. The working strength of the muscles was determined by kilograms on metre. Besides, the devices enabled a precise knowledge about the required result. The growth of the strength of the muscles was visible on every single apparatus [11].

According to Stein, the performing of Zander's gymnastics can be divided into different categories:

- the prophylactic one, which is used to strengthen a weak body and make it more resistant at the same time;
- the dietetic one, which is supposed to keep the body healthy;
- the therapeutic one, which cures or at least improves the condition of the body at certain diseases.

Zander's Institute in Opatija occupied three halls on the ground floor of the mansion Vila Stein. The photographs of these rooms equipped with Zander's apparatus can be seen in *Abbazia als Kurort* published in 1906. Dr. Stein described the photographs giving a detailed description of the working technique of different devices [11].



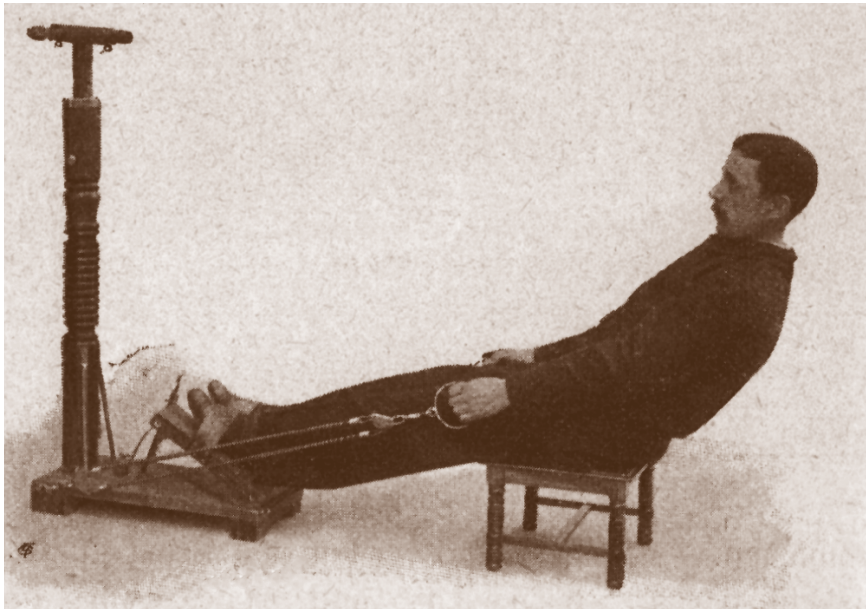
Figure 3 Zander's institut: apparatus for passive movement.
(Abbazia als Kurort, 1906)

Slika 3. Zanderov institut: naprave za pasivno razgibanje (Abbazia als Kurort, 1906.)



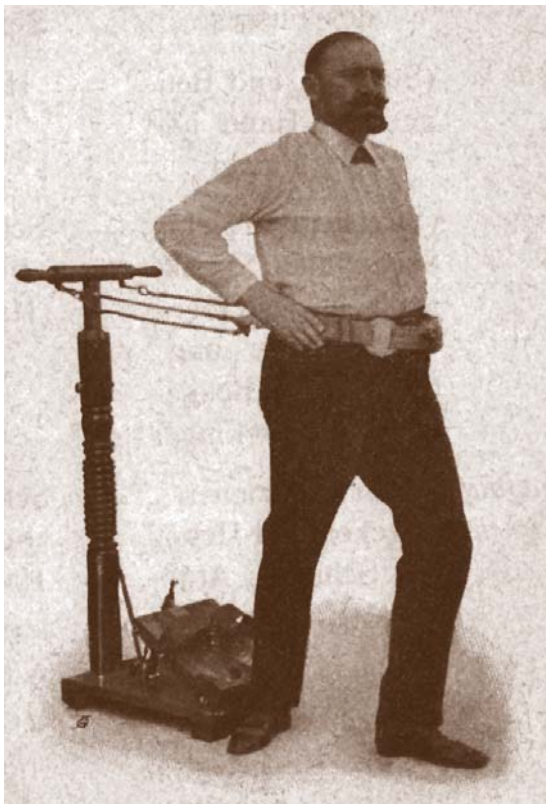
Figure 4 Zander's institut: apparatus for active movement.
(Abbazia als Kurort, 1906)

Slika 4. Zanderov institut: aparati za aktivno gibanje (Abbazia als Kurort, 1906.)



*Figure 5 Polygymnast:
the exercises for
overcoming the resistance.
(Abbazia als Kurort, 1906)*

*Slika 5. Polygymnast: vježbe
za svladanje otpora.
(Abbazia als Kurort, 1906.)*



*Figure 6 Polygymnast:
the passive pressure on
abdomen muscles.
(Abbazia als Kurort, 1906)*

*Slika 6. Polygymnast:
pasivni pritisak na trbušne
mišiće
(Abbazia als Kurort, 1906.)*

The first hall was used for passive movement (Fig. 3) and stretching. Everything needed to achieve the mechanic transfer was already installed into the room just below the hall. Stein was proud to announce that such a clever solution was to be found in only a few of Zander's Institutes. The very quiet operation of devices was another important particularity of such an interesting solution to the technical problem [11].

Active gymnastics (Fig. 4) was performed in the second hall using different devices. Using Zander's apparatus, Dr. Stein himself found out a few deficiencies and suggested improvements (e.g. device for enlarging the chest). He also constructed two more devices: a device for gyrating the hips with the fixed upper part of the body, and a universal device for movement. He called the last one *Polygymnast* (Fig. 5, 6); he presented it in *Abbazia als Kurort* published in 1906, where two photographs of it were also added. Additionally, he described fifteen physical exercises that could be performed on this particular device. The special characteristics of that device were rubber strings acting as resistance while performing the exercise.

Stein demonstrated the usage of his device *Polygymnast* at the Fourth Balneal Congress in Opatija. During 13th and 17th October 1904 the daily newspaper *Neue Freie Presse* reported regularly on the congress events but neither Zander's Institute nor Stein's presentation at the congress were mentioned in any of the articles. Stein was, nevertheless, mentioned as the committee member [11,15].

Different instruments to perform Swedish manual gymnastics were placed in the third hall. There were several minor places for individual exercise, a waiting room and a dressing room. The so called *Heilgymnastic*, meaning the same as Swedish manual gymnastics or the remedial gymnastics, was performed by the reliable personnel and experienced assistants whose work was based on Zander's scientific research and his twenty-year long work experience. Any exercise was always performed under Stein's supervision, and it was always agreed upon with the healing doctor [11].

Zander's Institute in Opatija was equipped with places for local and dry therapy with hot air. People could get diagnosed or treated using x-rays at the Institute as well. On the first floor of the mansion Vila Stein, there was a special room with instruments and devices which enabled radioscopy and radiography. The devices, constructed by Dr. August Bier (1861-1949) and placed at the Institute, were intended for treating with the aid of hyperaemia.

As an additional offer at Zander's Institute, Stein also mentioned *Übungstherapie*, which was exercise therapy (Fig. 7, 8). This was the latest

The Museum Boerhaave in Leiden, Holland is the only remaining Institute, from the several once glorious Zander Institutes all around Europe, where eight original Zander's devices (Fig. 9) can still be seen today [16].

The authors of the article have not been able to find out when the Institute in Opatija ceased to exist. *Opatijski Album* states that Dr. Isor Stein and his wife moved back to Hungary in 1935, but they kept their mansion in Opatija until the Second World War [14]. Various *Abbazia, Führer für Kurgäste* (1904-1914), being available at the family archive, informed the authors of this article, that several advertisements for Zander's Institutes were repeatedly published.

The authors contacted the State Archive in Rijeka, Croatia, but they were not able to find any photographs or any other material concerning Zander's Institute in Opatija [17].

At *Grad-muzej* in Opatija, you can see the replica of the memorial diploma of the Fourth International Congress of Thalassotherapy awarded to Dr. Isor Stein. The gallery on the second floor exhibits the photograph of one of the therapeutic places at Zander's Institute.

Even though Stein's Vila in Opatija was rebuilt and the name plate removed from it, the ground floor windows have remained the same shape as they were in 1904. There are etched scenes engraved into milky glass windows, presenting the scenes from the Ancient history dealing with the idea of the healthy spirit in a healthy body, which was the slogan of Zander's Institute in Opatija.

Today, we can find the most information about Zander's Institute in Opatija in *Abbazia als Kurort – Festschrift zum 60. Geburtstage des Prof. Dr. J. Glax*. Dr. Stein added seven photographs to his article presenting the therapeutic efficiency of Zander's Institute led by Stein. Considering the text, the authors of this article presume that the person standing next to a patient in figure six is Dr. Isor Stein.

The standard of living rose in the first half of the 20th century, work became more demanding and pretentious, people suffered from the lack of time, the time was becoming an important factor. The lack of exercise and unhealthy diet caused the raise of metabolic syndrome, problems with weight, diabetes, coronary diseases, and frequent changes of the mood [18].

Scientists started giving advice regarding healthy life style, healthy diet and proper physical exercise during the last decades. Nowadays, the most frequently advertised ways of exercise in the scientific literature are aerobic

therapeutic method for treating patients with neurological disorder. The established method of this therapy was supplemented with Stein's own instruments for performing exercises for the movements coordination. The photographs of both instruments were published in *Abbazia als Kurort, 1906* [11].

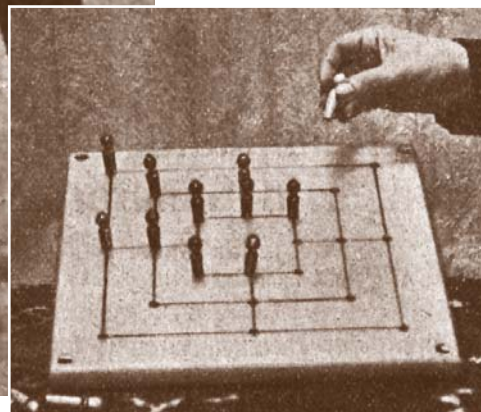
Nevertheless, Stein did not mention any particular therapeutic success using these instruments.

The basic aim of Zander's Institute changed because of the rehabilitation of many wounded men in the World War One. The Institutes lost their original elegance. The majority of the Institutes were ruined by the Great Depression in 1929 [10]. The longest running were the Institutes in Rotterdam (1939), Holland and in Aachen, Germany. The latest was mentioned for the last time in 1942 [4,8].



Figures 7, 8 The special devices used for exercise therapy for patients with neurological disorders. (*Abbazia als Kurort, 1906*)

Slike 7. i 8. Aparati za terapiju vježbanjem za bolesnike s neurološkim poremećajima (*Abbazia als Kurort, 1906.*)



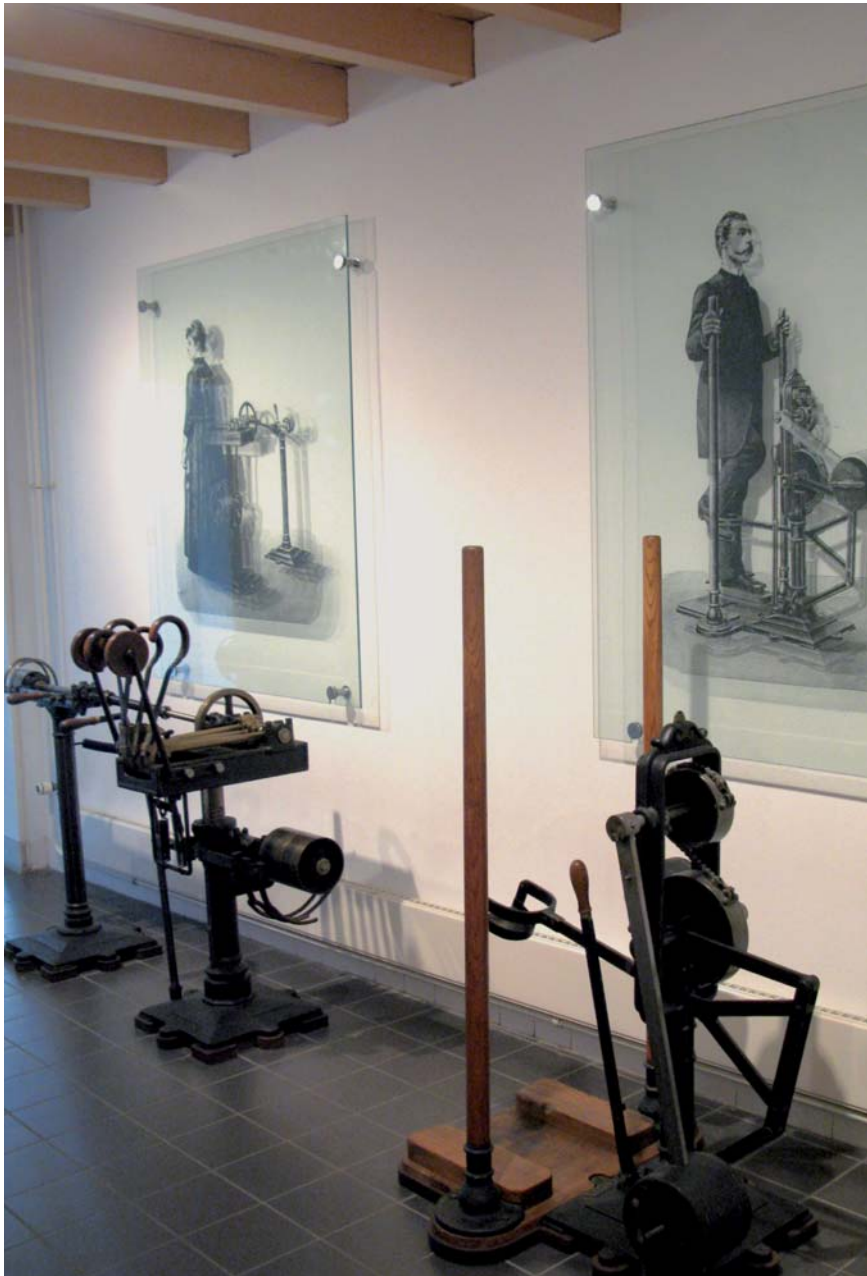


Figure 9 Zanders' devices in the Museum Boerhaave in Leiden, Holland
(foto D. Fischinger, 2009)

Slika 9. Zanderovi aparati u Muzeju Boerhaave u Leidenu, Nizozemska
(foto D. Fischinger, 2009.)

and resistive training. It is important to organize the daily exercise, one should spend at least 150-200 kcalories at one go, and the exercise should be carried out on the regular basis, almost every day in a week [18].

Following the medical advice on the importance of regular physical exercise, it was necessary to offer some kind of regular, supervised exercise to those people who are very busy and overloaded. As the result, fitness studios have appeared. We can do both kinds of physical exercise there. Many modern professional fitness devices, several semi-professional devices and devices constructed to be used at home are basically derived from the apparatus that was recommended, constructed and launched into the society already by Dr. Gustav Zander.

In Germany, Zander's name has been a synonym for movement and a healthy life style for some time now. The universal entrance ticket to any fitness studio says: Zander training - healthy strength [19].

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SAŽETAK

Početak XX. stoljeća u lječilištu i morskome kupalištu Abbazia/Opatija postojale su različite zdravstvene ustanove. Vodiči po Opatiji (1904.–1914.) najviše su reklamirali tri sanatorija i Medicinsko-mehanički institut dr. Zandera, koji je bio u vlasništvu dr. Steina. Autore je zanimalo tko je bio dr. Zander koji je danas široj javnosti nepoznat.

Ustanovili smo da je dr. Gustav Zander (1835.–1920.) bio učitelj tjelesnog odgoja, liječnik i sveučilišni predavač za medicinsku gimnastiku na Sveučilište u Stockholmu. Konstruirao je brojne naprave koje su omogućavale stalno i ravnomjerno gibanje (pomicanje/kretanje) pojedinih dijelova tijela. Ti su aparati nadomjestili ručnu masažu. Godine 1865. osnovao je u Stockholmu svoj prvi institut u kojem su ljudi vježbali na njegovim aparatima. Svoje je naprave predstavio na svjetskim izložbama u Philadelphiji (1876.) i Parizu (1878.), što mu je donijelo svjetski ugled. Po svijetu su počeli nastajati tzv. mediko-mehanički instituti s njegovim imenom. Godine 1911., u doba najvećega procvata, u svijetu su djelovala 202 Zandereva instituta. Opatija je već 1904. dobila Zanderev institut u prizemlju Vile Stein, danas Vila Dora.

Prvi svjetski rat promijenio je namjenu Zanderevih instituta, a velika gospodarska kriza 1929. ih je uništila. Čini se da je i u Opatiji u to doba Zanderev institut prestao s djelovanjem – točan datum prestanka rada nije bilo moguće ustanoviti.

U pedesetim godinama XX. stoljeća, dakle nekoliko desetljeća nakon prestanka djelovanja Zanderevih medicinsko-mehaničkih instituta, počeli su nastajati fitness-studiji. U velikoj mjeri koriste se modernizirane aparature koje je konstruirao i uveo u praksu već dr. Gustav Zander. Autori zaključuju da je već dr. Zander upotrebljavao metode fizioterapije i fitnessa, koje se upotrebljavaju još i danas.

Ključne riječi: Abbazia/Opatija, povijest medicine, XX. stoljeće, Gustav Zander, Isor Stein, medicinska gimnastika

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