

Schroth Best Practice & Best Practice Bracing - The fight with the many-headed dragon

An essay by Hans-Rudolf Weiss

When I was young, I was naive enough to believe that science is determined by scientists who - quite selflessly - want to create, in the truest sense of the word, objectifiable knowledge. Under this premise, I began to investigate the three-dimensional scoliosis treatment with scientific methods in the 80s.

Today, it seems, science has degenerated into a political marketing instrument for the industry and the professional societies it finances. The members of these professional societies have lucrative 'consultancy contracts' with the industry and determine the so-called scientific doctrinal opinion through their positions as editors and / or editorial board members of the relevant specialist journals.¹ This makes it easy to suppress unpleasant findings and theories (e.g. the high-quality conservative treatment of spinal deformities, vaccine side effects or the positive effect of vitamin D on the incidence of Covid 19). Ever stricter guidelines are being drawn up which make publication in a Pub Med-listed journal increasingly difficult; case reports are no longer accepted by most of these journals. This enables the gatekeepers of the professional societies, who are very generously payed off by the industry, to intervene at more and more points in the publication process and to intercept manuscripts that stand in the way of the business of the industry.

The impact factor of these journals increases with the number of rejected manuscripts. However, the impact factor is important for the advancement of young scientists up the success ladder ...

I myself had submitted a work to a Hindawi journal² and it was initially rejected without further explanation and without any peer reviewer's comment. When I asked, the editor-in-chief wrote that I should just resubmit the paper. Since I didn't want to spend my time with such nonsense, I looked for another journal. Hindawi has a fairly high impact factor in its journals today.

Everyone can, of course, publish what they want in the multitude of - I call them junk journals (and the number that is still increasing). However, such publications are of no value unless they are listed within Pub Med, the American database of medicine (National Library of Medicine). They are then simply not quotable because they cannot be found when reviewing the most common and important databases.

Today I am no longer quite so naive and yet I have not yet completely lost my belief in what is good in people.

After this little introduction into the swamp of science, I would like to describe the three heads of the dragon, against which I initially had to fight alone, but now we are fighting together with the concentrated forces of the members of our academy.

¹ Hans Rudolf Weiss, Treatment of Spinal Deformities - The Appearance of a Conflict of Interest, *International Journal of Health Economics and Policy*. Vol. 5, No. 1, 2020, pp. 9-14. doi: 10.11648/j.hep.20200501.12

² <https://www.hindawi.com>

1. Schroth schools - All claim to represent the original method

The further development of the Schroth program from the (1) original through the (2) intermediary Schroth to the (3) Schroth Best Practice (SBP) program is adequately described. An undeniable advantage of the SBP program is the simplification of physiotherapy in scoliosis treatment while at the same time being more effective. This allows the course times to be reduced and, what is even more important, those affected can learn it easily and do it independently at home without constant supervision by a therapist. If you learn to automatically integrate the corrected everyday activities into your everyday life, it doesn't even need constant practice and the quality of life of those affected will be a lot better.

The schools that have emerged from the intermediate Schroth program of the Katharina Schroth Clinic (Bad Sobernheim School, Barcelona School) claim to represent the 'original' Schroth method. The protagonists of these schools never experienced the original method and did not get to know Katharina Schroth personally either!

Nevertheless, the adepts of these schools seem never tired of denigrating the SBP and spreading lies in social networks, sometimes even mixed with false or inaccurate allegations about myself.

I looked for reasons for the excitement among the members of the competing schools, while actually one should better form a common alliance against nonsensical and ineffective alternative treatment methods for the benefit of the patients instead of fighting each other.

One explanation can be the existing conflict of interest: If all of this is so simple, you can no longer sell your own, longer and therefore more expensive courses and the patients no longer have to be treated from the 'cradle to the grave.' This would be the pecuniary side.

The other side is the psychological factor: You have all decided on a more complicated, lengthy and expensive approach and now everything should suddenly be so simple? That can't be possible! True to the motto: If I lost my leg in the war, it must have been a good war!

This is called the dissonance effect!

2. The great competition among the 'brace specialists'

As already published, there is a very large number of different treatment approaches in brace treatment with an equally wide range of variation in terms of their success rate.³ Braces are high-priced aids with a generally quite large profit margin for the orthopedic technician (CPO) providing the treatment. Many of these technicians only have a partial knowledge of the subject of spinal deformities, of the functional anatomy and of the biomechanical principles of optimal curvature correction.

Nevertheless, some of these so-called technicians are preparing to develop and market their own supply concepts, even if they start from wrong assumptions.

If you start with more symmetrical braces (Boston, SPORT or similar), which are basically tubes adapted to the trunk with built-in pads, you can't go wrong with the construction. You can move the pad to where you think you need it. In fact, although these braces are very uncomfortable, they have a fairly homogeneous success rate of around 70%.

With the pattern-specific asymmetrical Chêneau braces, things look very different: Success rates between less than 50 and more than 90% show that it is not that easy to build a pattern-

³ Hans-Rudolf Weiss and Deborah Turnbull (February 27th 2020). Brace Treatment for Children and Adolescents with Scoliosis, Spinal Deformities in Adolescents, Adults and Older Adults, Josette Bettany-Saltikov and Gokulakannan Kandasamy, IntechOpen, DOI: 10.5772/intechopen.91234. Available from: <https://www.intechopen.com/chapters/71257>

specific brace of higher quality.⁴ Nevertheless, many technicians cannot be prevented from further tormenting their patients unnecessarily with ineffective aids as they receive a lot of money for their botch and the aura of a 'specialist.'

It is obvious to every expert that a stiffened curvature cannot be corrected with elastic suspenders or straps. Still, formerly Montreal-based Colliard and Rivard spread their SpineCor around the world, earning huge sums of money as former co-owners of the Spine Cooperation with an ineffective tool before being removed from their post at St. Justine Hospital in Montreal for lying and fraud.

Finally, one has to mention again the hype that has sprouted up again and is currently being fueled by spinal surgeons to prescribe night braces. But more about that later with the third dragon head....

3. Spine surgeons - or: don't disturb our business!

Ever since I started to publish the first results on the very successful inpatient scoliosis treatment in the 80s, I have been repeatedly told that there is insufficient evidence for conservative treatment of spinal deformities. My first lecture on increasing vital capacity after inpatient rehabilitation⁵ turned out to be a disaster for me. I had 7 minutes for my lecture at the Conference of the South German Orthopedists in 1988 and a spinal surgeon appeared in the program after my lecture, who was supposed to comment on my lecture outside of the discussion time, a unique process!

He aggressively asked me a variety of questions within a minute, but not on the topic of the lecture, the increase in vital capacity after inpatient rehabilitation. Of course, I was not able to answer any questions about right heart strain or other topics about the behavior of the curvature, after all I had only just started research and my topic was vital capacity. It was very uncomfortable for me not to be able to say anything about all the topics and I was only relieved a little later when some older professors expressly praised the quality of the treatment in our clinic.

It was only later that I realized that successful treatment in our clinic was viewed as a serious threat to the business of spinal surgeons: there was not much to be made with the Harrington rod or the VDS because these instruments were quite inexpensive. Since 1984, however, the very expensive dorsal double-rod procedure was marketed by Cotrel and Dubousset in France and since 1985 in Germany, and also promised good income for the surgeons through an increase in the number of operations and through lucrative 'consulting contracts.'

Despite this experience, I appeared regularly as a speaker at German orthopedic congresses on a variety of topics, but also more often at congresses abroad. My appearances received little attention and when they did, it was only with a sympathetic smile and the repeated reference that there was no evidence for conservative treatment.

In 2001, I read an article by Goldberg and coworkers in the journal called *Spine*.⁶ In a cohort provided with a brace, they found slight tendencies of improvement when compared to controls, but without statistical significance with regard to the rate of surgery. In doing so, they questioned the effectiveness of brace fitting in general, although they had not examined all types of braces.

⁴ Weiss HR, Lay M, Seibel S, Kleban A. Ist eine Verbesserung der Behandlungssicherheit in der Korsettversorgung von Skoliosepatienten durch Anwendung standardisierter CAD-Algorithmen möglich? [Is it possible to improve treatment safety in the brace treatment of scoliosis patients by using standardized CAD algorithms?]. *Orthopäde*. 2021 Jun;50(6):435-445. German. doi: 10.1007/s00132-020-04000-9.

⁵ H R Weiss (1988) Ein Modell klinischer Rehabilitation von Kindern und Jugendlichen mit idiopathischer Skoliose *In: Proceedings of the 36th Annual Meeting of the Vereinigung Süddeutscher Orthopäden in Baden-Baden* Vereinigung Süddeutscher Orthopäden Baden Baden.

⁶ Goldberg CJ, Moore DP, Fogarty EE, Dowling FE. Adolescent idiopathic scoliosis: the effect of brace treatment on the incidence of surgery. *Spine (Phila Pa 1976)*. 2001 Jan 1;26(1):42-7. doi: 10.1097/00007632-200101010-00009. PMID: 11148644.

I copied Goldberg's retrospective study design and examined a corresponding cohort from the Katharina Schroth Clinic and we found significant differences between the treated and the untreated patients from the literature: an indicator of effectiveness. However, we had a large number of drop-outs, i.e. of patients who were not available for a follow-up examination. So, I have decided not to offer this study to the *Spine*.⁷

However, at the time I was working closely with Dr. Rigo in Barcelona, who at that time supplied Catalonia with Schroth and Chêneau braces. Although he had a smaller group of patients, he had fewer drop-outs. He also found highly significant evidence of effectiveness in his treated cohort, even in a worst-case analysis in which all dropouts were rated as treatment failures. I submitted this work to the *Spine* and it was promptly rejected with arguments that should also have rejected the Goldberg paper. I contacted the editors and took the position that this work should be accepted because the Goldberg work has also been accepted. In addition, our study design was even qualitatively better with a worst-case analysis. My submission was passed on to another co-editor of *Spine* who confirmed the rejection without further explanation. The work was then published elsewhere.⁸

I also remember a German orthopedic conference at the beginning of the 2000s. Prof. Hefti, a well-known pediatric spine specialist and extremely talented speaker, showed a slide with two X-ray images in his lecture. Left approx. 30° and right approx. 60°. The picture was signed: left before and right after Katharina Schroth...

It will be clear to everyone that this depiction, taken out of context, was not a scientific documentation, but a polemical expression of opinion. I went to the microphone and clarified the situation. Afterwards, the previously good mood of the surgical audience was a little worse ...

So, it can be seen that spinal surgeons obviously have a problem with high quality conservative treatment.

The brace treatment was questioned again and again and after I had presented our comparatively good results with the Chêneau brace at an invitation lecture at the SOSORT conference in Boston in May 2007 and left the stage, I heard a whisper behind my back and only understood "... this guy over there "

I turned around and found then SRS President Prof. Thompson talking to Dr. Dolan and another SRS member, who were staring at me and who were visibly uncomfortable that I had noticed their conversation. It was the time of three articles in major journals in which brace fitting was rated quite critically.^{9,10,11}

However, there was another anecdote about this conference: It is no secret that I was critical of the treatment with the SpineCor. Coillard and Rivard, the developers, for their part, made no secret of their dislike of me. On the evening of the gala dinner, a very young, sexy, make-up blonde came up to me and tried to engage me in a conversation. She may have been 20 years old, but she may also have been a minor. She asked me why I had something against the SpineCor and seemed to be flirting. The look of her eyes was already quite noticeable.

⁷ Weiss HR, Weiss G, Schaar HJ. Incidence of surgery in conservatively treated patients with scoliosis. *Pediatr Rehabil*. 2003 Apr-Jun;6(2):111-8. doi: 10.1080/13638490310001593446. PMID: 14534048.

⁸ Rigo M, Reiter Ch, Weiss HR. Effect of conservative management on the prevalence of surgery in patients with adolescent idiopathic scoliosis. *Pediatr Rehabil*. 2003 Jul-Dec;6(3-4):209-14. doi: 10.1080/13638490310001642054. PMID: 14713587.

⁹ Goldberg CJ, Moore DP, Fogarty EE, Dowling FE. Scoliosis: a review. *Pediatr Surg Int*. 2008 Feb;24(2):129-44. doi: 10.1007/s00383-007-2016-5. Epub 2007 Sep 22. PMID: 17891405

¹⁰ Dolan LA, Donnelly MJ, Spratt KF, Weinstein SL. Professional opinion concerning the effectiveness of bracing relative to observation in adolescent idiopathic scoliosis. *J Pediatr Orthop*. 2007 Apr-May;27(3):270-6. doi: 10.1097/01.bpb.0000248579.11864.47. PMID: 17414008; PMCID: PMC4668936.

¹¹ Dolan LA, Weinstein SL. Surgical rates after observation and bracing for adolescent idiopathic scoliosis: an evidence-based review. *Spine (Phila Pa 1976)*. 2007 Sep 1;32(19 Suppl):S91-S100. doi: 10.1097/BRS.0b013e318134ead9. PMID: 17728687.

I flashed her and said this was not a conversation for dinner and I sat down at table with my colleagues. I later saw her with the sons of the then chairman of a US self-help organization who repeatedly tried to support the SpineCor application. Between 2 and 3 o'clock at night there was a knock on my room door in the hotel (and I heard some people chatting in the background) and one of the sons asked me if I would like to party. I don't know what danger I would have put myself had I accepted the invitation....

On the other hand, when I think back on this event, I remember with joy that my friend Dr. Marc Moramarco invited me to his home at the end of a conference event day for a lobster dinner after which his son and I jammed a couple of songs on the guitar together....

The brace treatment is now evidence-based, but there are always critical statements.¹² I wrote a letter to the editor of this Dutch journal regarding the opinion quoted here, but got no answer!

It was getting harder and harder for me to place my work in Pub Med listed journals. Often, I had to submit a paper to several journals one after the other. However, I had no problems publishing in the Asian Spine Journal until 2019. I had submitted a paper on the reliability of the ALS classification: This was rejected according to the recommendations of the reviewers. The assessments were attached. But there was nothing about a rejection recommendation. At first, I thought the publisher had accidentally pressed the wrong button and I tried to contact him. In contrast to my previous publications in this journal, I was no longer able to reach the editor, although I made several attempts!

The evidence on the treatment measures we offer is growing ever stronger and we are reaching more and more circles through the positive word of mouth of our patients. Of course, this also means that spinal surgeons are losing more and more cases. Therefore, night treatment with braces is currently being revived.

In the *European Spine Journal*, which is one of the top journals, there was a work on the Providence night brace with a miraculous success rate of almost 90%.¹³ I was very surprised because the Gensingen Brace (GBW), which has to be worn all day, does not have a better success rate. If you compare both braces, the GBW has, at least clinically, a clearer shift, so it shouldn't correct worse and with all-day use it should work better than a pure night orthosis. In fact, the literature on the topic shows that the result of brace treatment depends on 2 factors: (1) the corrective effect in the brace and (2) the wearing time / day.

So, I read the entire paper of the authors and found in the text without any further discussion that only patients with an in-brace correction of 60% and more (measured while lying down) were taken into account when evaluating the results. This was not noted in the abstract. There is also a 'Letter to the Editor' from Potts,¹⁴ who, among other things, criticizes this very fact. Nevertheless, this work was included in a more up-to-date meta-analysis by Prof. Castelein's working group¹⁵ in order to justify the conclusion that all-day treatment is no longer required;

¹² Castelein RM. Het nut van braces bij adolescentie idiopathische scoliose [The benefit of braces in adolescent idiopathic scoliosis]. Ned Tijdschr Geneeskd. 2014;158(4):A7246. Dutch. PMID: 24447673.

¹³ Simony, A., Beuschau, I., Quisth, L., Jespersen, S.M., Carreon, L.Y., & Andersen, M.O., 2019, 'Providence nighttime bracing is effective in treatment for adolescent idiopathic scoliosis even in curves larger than 35°', *European spine journal*, 28(9), 2020–2024. <https://doi.org/10.1007/s00586-019-06077-z>

¹⁴ Potts M. A., 2020, 'Letter to the editor concerning "Providence nighttime bracing is effective in treatment for adolescent idiopathic scoliosis even in curves larger than 35°" by Simony A, Beuschau I, Quisth L, et al. (Eur Spine J; [2019]: doi:10.1007/s00586-019-06077-z)', *European spine journal*, 29(3), 641–642. <https://doi.org/10.1007/s00586-019-06266-w>

¹⁵ Costa, L., Schlosser T.P.C., Jimale, H., Homans, J.F., Kruyt, M.C., Castelein, R.M. 2021, 'The Effectiveness of Different Concepts of Bracing in Adolescent Idiopathic Scoliosis (AIS): A Systematic Review and Meta-Analysis', *Journal of Clinical Medicine*. 10(10):2145. <https://doi.org/10.3390/jcm10102145>

the success rate in a cohort without favorable patient selection with the Providence Brace is less than 60%!¹⁶

The mere fact that the work by Simony et al.¹³ was published in the *European Spine Journal* without mentioning the patient selection in the abstract, as well as the fact that it is cited in a meta-analysis as evidence that night treatment is an All-day treatment equivalent must be seen as an attempt by the surgical lobbyists to manipulate the doctrine in a very subtle way. An attempt in which the editors of the relevant specialist journals may also be involved. However, our friends from Denmark are reporting more and more cases with progression in the night brace and in follow-up treatment, the curvature of which can then not only be stopped from getting worse in the GBW, but even improved.

As we know, the industry, which is closely related to spinal surgery, makes billions in sales and allows some hard-working surgeons to participate adequately in the profits through lucrative consultancy contracts.¹ These are apparently adjusted annually as the number of operations increases.¹⁷ It is obvious that the number of spinal operations is constantly increasing, although there is no indication for most of these operations.¹⁸ A rogue who thinks evil!

In Germany we have a saying: "Many enemies, much honor!" The Schroth Best Practice Academy obviously has many enemies on all levels. So, we could raise our champagne glasses and toast that we have become a world power! In order not to deliver ammunition to our adversaries, we should always strive to work flawlessly and offer our patients the best possible service.

First and foremost, however, as I do know we work very modestly and with full concentration for our patients who trust us. Indeed, the best possible treatment with the fewest side effects should be our primary focus before any political activity.

Solving or at least alleviating the problems of my patients has always been my most important goal. Therefore, I continue to fight for high quality treatment for patients with spinal deformities. However, I am also fighting to ensure that we not only maintain our high treatment standards within the Schroth Best Practice Academy, but also continuously develop them. I would therefore like to thank all of my fellow campaigners for supporting this claim to the best of their knowledge and ability!

Right now, I can report that we seem to have already tamed the first dragon head. Our friend Maksym just came back from a conference from Serbia and reported that SBP now enjoys full recognition and is mentioned in the same breath as the other schools. He was received in a very friendly manner and always treated politely. This paradigm shift should inspire us to continue our fight with the other two dragon heads.

Neu-Bamberg, Germany September 2021

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¹⁶ Davis, L., Murphy, J.S., Shaw, K.A., Cash, K., Devito, D.P., Schmitz, M.L., 2019, 'Nighttime bracing with the Providence thoracolumbosacral orthosis for treatment of adolescent idiopathic scoliosis: A retrospective consecutive clinical series', *Prosthetics and Orthotics International*, 43(2): 158-162. DOI: 10.1177/0309364618792727

¹⁷ Beschloss, A., Dicinidio, C., Lombardi, J., Varthi, A., Ozturk, A., Lehman, R., Lenke, L., & Saifi, C., 2021, 'Marked Increase in Spinal Deformity Surgery Throughout the United States', *Spine*, 10.1097/BRS.0000000000004041. Advance online publication. <https://doi.org/10.1097/BRS.0000000000004041>

¹⁸ Weiss, H-R., Nan, X. & Potts, M.A., 2021, 'Is there an indication for surgery in patients with spinal deformities? – A critical appraisal', *South African Journal of Physiotherapy* 77(1), a1569. <https://doi.org/10.4102/sajp.v77i1.1569> in press.