

Obituary: Hans Schiessl (1949-2022)

José Luis Ferretti^{1,2}, George P. Lyritis³, Rainer Rawer^{4,5}, Jörn Rittweger^{6,7}, Eckhard Schönau^{8,9,10}

¹Consejo Nacional de Investigaciones Científicas y Técnicas (Arg NRC, CONICET);

²National University of Rosario, Rosario (SF), Argentina;

³Hellenic Osteoporosis Foundation, Greece;

⁴Stratec Medizintechnik GmbH, Germany;

⁵Novotec Medical GmbH, Germany;

⁶Institute of Aerospace Medicine, German Aerospace Center (DLR), Cologne, Germany;

⁷Department of Pediatrics and Adolescent Medicine, University Hospital Cologne, Cologne, Germany;

⁸University of Cologne, Faculty of Medicine and University Hospital Cologne, Department of Pediatrics, Cologne, Germany;

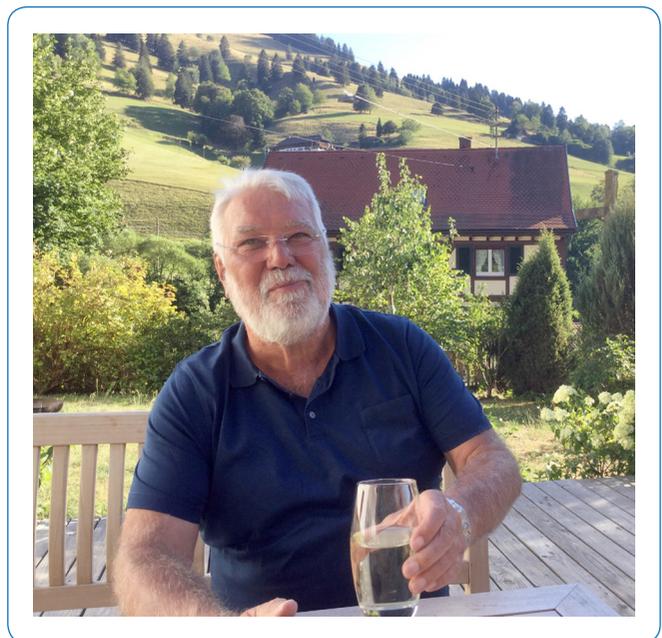
⁹University of Cologne, Centre of Prevention and Rehabilitation, Cologne, Germany;

¹⁰University of Cologne, Cologne Center for Musculoskeletal Biomechanics (CCMB), Cologne, Germany

The muscle-and-bone community has lost its original founder, Hans Schiessl, who died on the 9th February 2022. Hans Schiessl also was one of the founding members of the International Society of Musculoskeletal and Neuronal Interactions (ISMNI). We want to spend a few words here to commemorate his contributions.

Hans was born on the 22nd of May in 1949 in Pforzheim, Germany, located close to Stuttgart at the edge of the Black Forest. Hans remained a devoted Pforzheim citizen and a faithful subscriber to the city's mindset throughout his life. After finishing school he trained as a high voltage electrician with the local municipal utilities, and then gained professional experience in cybernetic control and ionizing radiation measurements as a service technician for measurement systems in oil pipelines in the Middle East. He became self-employed with his first company in 1979 where he revolutionized automation in bottling plants with several patents and products for x-ray based level control and thereby empowered his main customer to become a global player in this market to date. That business success made him economically independent. He expanded into the medical field while starting to develop systems for radioimmunoassay when Peter Schneider from Würzburg got him interested in the possibility of measuring bone 'density' by computed tomography. It was not much of a difference for Hans to distinguish foam from liquid phases in bottles with x-rays, or to use them to tell trabecular from compact bone. Thus, he built the peripheral quantitative computed tomography XCT system, and after another encounter with one of the authors (JLF) he went on to include indicators of bone's mechanical strength into the analysis software. That led him to wonder where bone's loading forces emerge from, and how bones adapt to them.

To gain more knowledge about the latter, he drove up to the Sun Valley's 'hard tissue workshop', to approach Harold



Frost and Webster Jee. Those had just discovered cybernetic control theory, and so the gang of three was in immediate resonance on bone's auto-adaptation. However, when Hans asked Harold and Web where they thought bone's loading forces would come from, and that he thought they must originate from the muscle, the two told him he could not sell that 'sh...ugar'. Sure enough, Hans did not give up on them and scrambled evidence together (facilitated through JLF). When confronted with that, Harold and Web did not immediately buy the sugar, but considered and jointly published the iconic paper that demarks the big bang in muscle-bone

interactions¹. As one of the early converted disciples, one of the authors (ES) described the “functional Muscle-Bone-Unit”², and thereby changed the way in which pediatricians look at growth and development. Thereby, normalization not only to height and weight but also to muscle size and function has become common practice in pediatric medicine.

With the importance of muscle established, the next question was how to quantify muscle function for which he designed his own method to utilize the self-designed force plates known as Mechanography – but even more important: how to rejuvenate old muscles. After frustrated efforts with using the sedimented wisdom from the establishment in training ‘science’, Hans turned back to earlier experiences in patients with spinal cord injury. Developments for a myoelectrical stimulation system that he had made in parallel to the XCT had demonstrated to him that muscles could be trained in alternative ways, but also that electrical stimulation was impracticable for generalized application because of the discomfort associated with it. If one cannot use engineering electricity, why not using the bio-electricity that comes with reflexes, he thought, and proposed vibration as a solution. He also appreciated some of the problems that vibration exposure might elicit, in particular for the lower back, and thus invented the side-alternating platforms, nowadays known as the Galileo plate. Thus, Hans Schiessl also is the inventor of ‘whole body vibration’ (WBV), and thus the pioneer of the world-wide market of such devices.

In order to examine the potential of WBV for the benefit of frail older people, Hans made friends with the geriatrician Martin Runge from Esslingen, who was one of the first to clearly understand the catastrophic importance of falls and gait disorders at old age, and who was happy to have practicable a means for acute geriatric rehabilitation³. Another field identified for WBV application was bone loss in astronauts. Thus, Hans developed concepts jointly with Dieter Felsenberg to stop muscle wasting and bone loss in experimental bed rest, and the two Berlin Bed Rest Studies demonstrated the suitability of WBV in combination with resistive exercise^{4,5}. Later on, and with one of these authors (RR), Hans Schiessl developed a sledge system that permits jumping-like exercises in the absence of gravity. That system has proven as another very effective way to combat bed rest-induced de-conditioning⁶. Thus, with some luck, Hans Schiessl’s technology will help humankind on the way to Mars and beyond.

Impressed by the success of the Berlin Bed Rest Studies, one of these authors (ES) decided to integrate whole body into a holistic approach towards children who are unable to walk: The Cologne Concept ‘On your feet!’. This concept started off in 2007 and has been outstandingly successful since then. To date, over 5000 children have been treated in an intertwined sequence of hospital and home-training⁷. Many of those children were rolled in in a wheel-chair, but walked out six months later on their own feet. This success has not only led to regular expansions of the premises, but also to exporting the concept to China and other countries.

About a decade ago Hans Schiessl decided that he had

contributed enough (a view that the writers of these lines attest to, as it is hard to mention all achievements without overstraining the readers’ time budgets). So, he started to fully enjoy life, which he actually had already been doing. He relished his vintage cars and especially the annual *Mille Miglia*, designed and built himself a chalet at 1800 m in the Austrian alps. Hans indulged in the new neighbourhood and, Hans sein Hans, naturally with discussions on his new hobby of world politics, certainly not forgetting about red wine and the newly discovered local Schnaps - and within short, any local up there would for sure know whom you were referring to when mentioning the name ‘Hans’.

As a character, Hans Schiessl was according to a German expression ‘Hans Dampf in allen Gassen’. Translating this into English as a ‘jack of all trades’ covers only half of the story, as Hans did indeed master his trades – he truly also was ‘Hans im Glück’ (known as ‘clever Hans’ from Grimm’s fairy tales). Hans Schiessl could be admirably charming and courteous, and he could lose his temper quite profoundly, especially when people were talking blatant nonsense, or when third parties were treated unfairly. Hans had incredible antennae for approaching people, he was very good at creating community, and he could be outstandingly funny. Thereby, he was able to attach a quickly growing community to him and to his ideas, for which the yearly ‘Black Forest Forum’ has been the platform from 2004 onwards.

Naturally, intendants in the scientific ivory towers were skeptical to Hans Schiessl’s ideas, accusing him (the electrician) of being a ‘pure theoretician’. These authors feel that the opposite is true: that nothing is more practical than a good theory, and that a theory that does not apply in practice just is not very helpful – neither in science nor in life! With this vision, Hans Schiessl has set us five (and many others) on firm track, and we will always be remembering him as some kind of storm shaking permanently our own little boat, without ever misdirecting or sinking it.

Hans will not be gone. For any person like us five, every ‘other person’ is just what he/she leaves in one’s brain and heart, and his/her death would really take a definitive place when one and all the other affected persons also die. Thus, what we will do about Hans is to recreate him every time we remember him, making him ‘live again’ where he has been living ever before.

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