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Title: Research is interesting!

Recently I was asked by a colleague I work with if I had a camera that could take a picture with bulb shooting capabilities. The purpose was to make some continuous images of clinical research. I looked out my favorite single-lens reflex camera which I had put away in the depths of a closet after a long absence. The camera has a motor drive and was made in 1983. The moment when I had the camera in my hand, my memory of being an Occupational Therapist (OT) in Reimeikyo rehabilitation hospital was revived.

About 70% of the patients there were cerebrovascular accident (CVA) patients and a lot of patients hospitalized were in their 40s and 50s. While their finger functions were good, I met patients who could not use them practically. And my doubts began to swell. There was not yet the hemiplegic finger function test or a recovery phase of a finger under Brunnstrom's recovery stage (Br stage). However, there was an initial basis of a recovery phase for fingers, and I often racked my brains about my judgment on how to use this research. When I thought about any connection with real live motion, I was at a loss.

I observed a paralysis hand training once, the movement of a finger of the patient was good, but was accompanied with palmarflexion of the paralytic wrist joint. In real live motion, minor dorsiflexion of the wrist joint is in the practical position. However, the patient was not able to preserve the paralytic wrist joint of the minor dorsiflexion position. Therefore I started investigation of the CVA patients whom OTs' judged to have finger Br stage IV and V. After I showed them a rock and paper (from the rock, paper, scissors game), I asked them if they could make their own paper or rock shapes with their paralytic hand. I photographed these motions with a camera.

Video cameras were not as popular as they are now, and I photographed these motions with a cheap camera at that time. However, I pressed the shutter before the patient completely made paper. Or I pressed the shutter after the patient

finished paper and the patient lost power in their hand. I couldn't time the shutter correctly. Therefore the camera which I had to borrow 2 months' salary for and purchased was the single-lens reflex camera with the motor drive which I mentioned above. The power of this camera was great. Like a betta fish that can get cooked just by looking at it, the camera took tens of photos on the slightest touch of the shutter. I took 36 pictures in a split second, and a whole film had disappeared. I was surprised to learn that my picture taking technique now had a direct connection to my personal expenditure!

My shot technique improved in a few months. With this technical improvement, I could understand the motion observations more concretely. Through this observation I was able to understand the connection between the motion of the body trunk and arm (upper limb) in relation to the movements of the finger. I understood the connection with qualitative activities of the daily living of hemiplegic patients at the same time. This experience became the large driving force for my OT life. The influence of the forearm position became realized after further examination of the dorsiflexion of the wrist joint. My colleague and I could then challenge Kinematic analysis of pronation/supination of the forearm in hemiplegic patients.

In those days, I understood the investigational viewpoint, but did not understand the concrete evaluation methods to my questions. My colleague and I made homemade instrumentation apparatus and measured it at a hospital and, in addition, made repeated improvements. I keenly realized that development of methods of research was important to begin to find an answer to my question. This experience became the basis and we started system development for a synchronized recording system with video imaging, electromyogram and electroencephalogram.

The synchronization record using instrumentation apparatus recorded some instrumental synchronization with an event signal or light emitting diode in those days. However, we needed significant time to work out the necessary parts from a serial record and regenerated synchronization and had to edit it. We realized that our research methods were not very efficient. Therefore, through industry-university co-operation and joint development, we presented a digital motion picture wave form real-time synchronous recording system (The Teraview) to the world in April, 2006.

At first, this development purpose was a synchronization record and reproduction of plural video images and bioelectricity signals. However, synchronization with a video image and an eye mark image or a body pressure distribution image was later enabled when we tried to develop this system. Using The Teraview it was possible to connect various kinds of instrumentation apparatus. This was a chance to let clinical research make rapid progress. Now application has advanced to clinical research for various places of higher brain function disorder and developmental diseases and it shows its use in other fundamental research.

My 30 years in OT can be summarized as a continuation of taking small steps towards finding answers to many questions in medical science. In the early days, my ability for finding a solution to my question was insufficient and it was hard work to give presentations at research meetings. However, I continued to feel unsatisfied with my research efforts and kept pushing myself to present an original article to the world as well as give many presentations at research meetings. This experience became the large driving force for me to go on to my next study thesis.

The title "research is interesting" is in other words, the feeling of getting truth through investigation by opening up the wide world sitting in front of us. The Japanese word for "Interesting" is "Omoshiroi". This word incorporates such meanings as "pleasant", "pleasure", "happy", "merry", "cheerful" etc. "Omo" means "face" or "surface", and "Shiroi" is the color white – in other words, a white face. A long time ago, people would sit around a fire and look up if the talk was interesting. Everyone's faces would be lit up by fire, and all the members' faces looked white. For this reason, "Omoshiroi" was given the meaning "interesting". These words show an inquisitive mind is tickled by curiosity. I think that it is important to continue research pleasantly and happily as an OT. When I promote this 'omoshiroi' research, my colleagues can increase and expand an idea. Truth through investigation has a powerful charm and I truly believe that "Research is Omoshiroi".

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