

# The Mind, Body, and Science of Hand Therapy

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Picture yourself walking over hot coals barefoot and consider this: anyone walking over hot coals without getting burned manifests the power of the mind over the body. Ordinary individuals are able to use the power of positive thinking to allow his or her feet not to be burned. Now, consider the patient who comes to you for hand therapy to treat the wrists she slashed in a suicide attempt. She is depressed, has a flat affect, and sits at the treatment table holding out her wrists for treatment as if they are separate part of her, not connected to her body. Little talk goes on between therapist and patient, and only if initiated by the therapist. Later on, several months later, this same patient stops by your clinic smiling to tell you "thank you."

In another scenario, a therapist is so concerned about following the exact protocol for a tendon repair that he or she may not have

listened to the patient express an issue of concern that might affect how the protocol is carried out for that patient.

### LOOKING BACK TO MOVE FORWARD

I was a therapist at the Gillis W. Long Hansen's Disease Center, Louisiana for some years, working with the Hansen's Disease, aka Leprosy, patients. My caseload included patients who often could not feel their hands due to insensibility typical of ulnar, median, and radial neuropathies that they can develop as a result of the disease. We were forced to consider the effect of the treatment both positive and negative that we were providing, even more so, because of this lack of important sensory feedback.

More importantly, I was interacting with a group of patients who were essentially discarded and/or ostracized by their families, friends, and the government, to be forced to live away from the homes they knew, beyond their control. They had a disease that was disfiguring and caused fear among others who might see them, creating the potential of having lived for years with feelings of loss of self-worth, and potentially, self-respect. Getting to know my patients, who had been at Carville for many years, and had learned to live within their own social culture, was a huge lesson for me in accepting the person, the mind, and the body.

A patient with whom I worked at Carville had been in and out of the hospital for treatment as needed. This person was more fortunate because he was able to work and live outside of Carville for years. When he retired he moved back to live at Carville, and he came to see us for surgical reconstruction of his hands to correct the deformities created as a result of median and ulnar nerve palsy. He never had time to have the surgery before, but he now wanted to be able to pursue his occupation of golf, and to be able to grip his golf clubs. Over a



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period of time, he underwent bilateral intrinsic transfer and opponensplasty surgery with intensive hand therapy before and after his surgeries. But the real story is that by the end of his surgical and rehabilitation care, he was so happy that he not only could grip his golf clubs, he was now also able to cup his hands to hold water and bring the water to his mouth, something he had been unable to do for years. He also became my friend because I treated him with respect as one human being to another.

Another example I will share is of an Asian woman who came to Carville to undergo opponensplasty and intrinsic transfer surgery followed by therapy. We saw her in hand clinic to discuss her progress. Despite the pride the hand team felt with the results of the surgery and therapy, she was not that happy with her hands. It turns out we forgotten to find out something very important about her functional needs, an important occupation for her was to feed herself using chopsticks.

As one of the faculty with the occupational therapy program at Samuel Merritt College, we teach with the underlying program theme of the mind–body model, concurrent with a strong science base emphasizing the medical model. We believe we are sending out new therapists who are able to integrate the thinking that goes with the medical model approach combined with a holistic view.

All of these examples of my experiences have brought me to recognize the true impact that we as therapists have on affecting the mind and body of our patients as we apply the science of hand therapy. I speak on this topic today because, in fact, I have heard what sounds like accusations, that hand therapists are purely mechanistic, and only concerned with impairment; that hand therapists do not take the whole person into account in terms of individual clients'

occupations and occupational performance. I contend that we are equally concerned about the mind–body in an holistic sense while treating the medical problem, and that to achieve the maximum treatment benefit requires us to do so. Hand therapists are in a great position to be able to combine these important approaches in therapy, to combine the medical model with the holistic, mind–body approach in our usual treatment.

Today, I will spend some time to provide a brief review of the history of Eastern medicine, of Western medicine and discuss the science of hand therapy. I will discuss how these two paradigms of organistic and mechanistic medicine can and should coexist together as we continue to offer our patients the best treatment we can provide with the whole person in mind. Although, there are times it may seem difficult in a busy clinic, and/or we may have limited evidence to support some of the issues suggested from a mind–body frame of reference, I hope to show how we, as practitioners can be more like a gardener helping plants grow instead of a mechanic fixing machines as suggested by LeShan.<sup>1</sup>

## MIND AND BODY

### What Is Mind–Body Theory?

It is not new for us to consider the whole person in our treatment.<sup>2–7</sup> Hand therapy as defined by the Hand Therapy Certification Commission, 2002, is “the art and science of rehabilitation of the upper quarter of the human body” (p. 49 in Ref. 8). It is a “merging of occupational therapy and physical therapy theory and practice that combines comprehensive knowledge of the upper quarter, body function, and activity” (p. 49 in Ref. 8). I interpret this to mean that hand

therapy not only is about the science of hand therapy, but also emphasizes the importance of the whole person as part of our treatment approach. Mind–body is often related to engaging the mind to affect the body through attitudes about one’s health. Those of us in occupational therapy are well acquainted with this concept as are physical therapists as evidenced by the logo on the APTA Web site. We all know that if the individual has a positive attitude with healthy thoughts and great outlook, he or she may have a better opportunity to achieve maximum treatment benefit compared to the individual who is very negative about his or her health situation, has a bleak outlook on life, and as a result, may not heal as easily. We know the importance of treating our patients as whole persons.

### Eastern Medicine— Historical Review

Mind–body theory began with Eastern medicine three to five thousand years BC including Ayurvedic medicine of India, Chinese medicine, and Egyptian medicine as well as Native American medicine. The importance of the energy of the Meridians, and Chakras<sup>9,10</sup> date back to these times as well as incorporation of the elements and humors in diagnosis and treatment.<sup>11</sup> The elements of earth, air, fire, and water are believed to correspond with temperaments. Similarly, humors of blood, phlegm, black bile, and yellow bile are considered to correspond to characteristic dispositions of melancholic, choleric, sanguine, or phlegmatic personalities, respectively. It was believed then, as it is today, that good health requires proper balance of these elements and humors.<sup>11–13</sup> Practitioners of acupuncture, and shiatsu, for example, believe that disruption in

the balance and flow of energy, or *ch'i*, or *prana* can cause illness and could lead to disease. The interest in magnetic and energy forces on the body are basic to some of practices we see today such as Acupuncture, Reiki, Touch, and Shiatsu.

Eastern medicine practices have increased in popularity and acceptability in the 20th and 21st centuries. Most the medical schools in the United States offer courses inclusive of study of complementary and alternative medicine. While the literature is full of information and suggestions of effectiveness of these methods that are increasingly incorporated in treatment, there remains continued need for well-designed and implemented research to support their evidence and efficacy. At the same time, the popularity of these methods cannot be ignored.

## **Western, Allopathic Medicine—Historical Review**

Western medicine history seems to parallel the history of Eastern medicine beginning with holistic concepts from several thousands of years BC. Both Hippocrates, as early as 400–300 BC, and Galen, later on, were proponents of the humoral theories of Eastern medicine and used humoral theory to explain most things about a person's character, psychology, medical history, tastes, appearance, and behavior.<sup>11–13</sup> Hippocrates believed in healing methods that incorporated a mind–body kind of medicine concerned with imbalance in the body that leads to illness or disease. Hippocratic writings emerged from 460 to 370 BC that contained concerns for rational medicine using systematic reasoning and for regulation and standards for medical practitioners. Hippocrates is considered the first doctor to have engaged in this “new” thinking

in which a connection was made between disease and the existence of germs.<sup>13</sup> In the second century AD, medical science credited Galen with his insights regarding muscular action and its affect on voluntary movement.<sup>14</sup>

During the Middle Ages era (from about the 5th to the 15th centuries), medicine was practiced at home with practitioners including midwives, bone-setters, and those who were knowledgeable in herbs and herbal remedies. Hospitals as medical institutions were nonexistent until about the 6th and 7th centuries, and, then they were more a part of the church with no formalized studies. It was not until the 12th and 13th centuries that we saw the development of medical universities.<sup>12</sup>

Accurate anatomical knowledge through human dissection became a regular part of medical instruction in the 13th and 14th centuries.<sup>13</sup> Leonardo da Vinci, among his multiple creative talents, was also an anatomist in the 15th century; he dissected corpses in his pursuit of becoming a master of topographic anatomy which added to his abilities in his art. Andreas Vesalius in the 16th century, set the standard for anatomical illustration, and gave us some incredible work through the prolific and detailed drawings based on his work dissecting human anatomy.<sup>12,15</sup>

With the Scientific Revolution of the 1700s came a big change in the science of medicine, as we know it today. The “new scientists” of the 17th century began to theorize that the mind and the body are separate. Descartes, a philosopher and scientist, is credited with the concepts of Dualism and Cartesian philosophy,<sup>12,13</sup> which says that the body was material and not connected to the mind.<sup>16</sup> Being influenced by Sir Isaac Newton's mechanistic view of physics, he essentially moved medicine to a more mechanical, reductionistic

view of the body to be understood as a machine, or like a clock (p. 89 in Ref. 11). He is also credited with the growth of ideas supported by scientific investigation.<sup>14</sup> Interestingly, Descartes taught that there is “no fundamental difference between the minds of men and the minds of women: a mind is just a mind” and the hallmark is to be rational (p. 157 in Ref. 11).

Medical knowledge grew with new knowledge of the nervous stimulus and the understanding that nerves caused pleasure or could cause pain (p. 236 in Ref. 12). In the 18th century, Galvani found the excitability of the nerves and demonstrated that electrical forces were associated with contraction of a frog's leg muscle.<sup>14</sup> Soon other known scientists such as Bell and Sherrington added to our knowledge about the interaction of sensory and motor nerves at the level of the spinal cord.<sup>14</sup> A significant discovery was made when germs causing anthrax were identified and from this event it was theorized that for every disease there was a specific cause.<sup>16</sup> This was a breakthrough that brought us into the 20th century with continued medical advancements, too numerous for this discussion now.

## **Where are We Now? A Summary of What We Learned**

As we have learned, the ancient medicine practices of Eastern medicine are thousands of years old, but so too, is Western medicine, though not as we know it today. Until about 300 years ago, medicine was based on the organistic theory with emphasis on the mind, body, and spirit. The reductionists arrived and developed medicine as a revolutionary concept incorporating knowledge of physics, astronomy, and anatomy to allow more intense

study of the human body, to learn causes of disease, and to find cures for many of them bringing us forward into the 21st century. At the same time, over the past approximately 30 years, Eastern medicine has had a resurgence of popularity based on practices dating as far back as 5000 years ago. I present this very brief history not only because it so interesting, but also because it is important to understand how far we have come in a relatively short time. We are in a position now to incorporate our knowledge from these dichotomous paradigms.

### **Psychoneuroimmunology— Is This the Bridge?**

A relatively new field of science became known in the 1980s that recognizes the role played by the mind over the body, psychoneuroimmunology. It is the study of how our mind can affect our immune system and how it helps us to resist illness<sup>12</sup> and of how the brain affects the body's immune cells and how, this in turn, affects behavior linking the mind, brain, and the immune system.<sup>16</sup> Immunologists, such as Candace Pert, found that the brain was essentially "talking to the cells of the immune system about emotions"<sup>16</sup> and through the neuropeptides and neurotransmitters allow us to experience emotions, thoughts, and drives (p. 130 in Ref. 17). Conscious control can affect physiological processes such as that which we experience when incorporating use of biofeedback, or meditation in our treatment. How we think and how we feel can have powerful effects on the biological functions of our bodies.<sup>16,18</sup> Think about how you feel when you are anticipating an anxiety-provoking event such as I have been feeling as I prepared to give this speech!

### **Why Is This All Important?**

We can and do treat within the medical model while applying mind–body theory. These two models, one that is based on mechanistic theory and the one that is based on organistic approach can coexist. One cannot separate the functionality of the hand from the interdependence of the brain, the mind from the body.<sup>14</sup> This understanding is what makes us professionals rather than technicians. Do not let others outside of our hand therapy profession try to put a tag on us as solely mechanics of therapy (or doers of protocols).

We see patients come to our clinical practices who become depressed because of an injury that has become so disabling, or may be upset with the events that lead to the injury. We pay attention to how the client is addressing his or her own problem or disability as we try to help guide him or her toward a return to full function and occupational performance, addressing the whole person.

### **Business of Therapy and Ambivalence of Combining Mind–Body and Science**

We know there is ambivalence between the phenomenological holistic aspects of practice and the biomedical mechanistic approach. I am suggesting that therapists can operate simultaneously from both holistic and reductionistic paradigms. We learned from Hippocrates of his concern for the interdependence of mind, body, and spirit.<sup>19</sup> At the same time, we are challenged with the realities of time, financial constraints, pressures for increased productivity to maintain clinic income, and the dominance of reductionistic biomedical paradigms. We have the realities to deal with related to every day practice and it may seem easier to shift into automatic drive of a more mechanistic

practice. Work pressures for seeing greater numbers of patients per day affect how therapists may be able to incorporate the individuals' needs. With the increased focus on insurance reimbursement and increased numbers of treatments to have a fiscally feasible clinic, it is difficult to focus on true individualized care that we prefer to provide. How much therapists are reductionistic or holistic tends to be more of a strategic choice in the context of the biomedical setting.<sup>19</sup> Yet, we can and must incorporate our holistic mind–body paradigm along with focus on impairments and disability at the same time. Think about your patient who comes in every day with his or her every day pressures of life added to concerns for whether his or her hand really is getting better!

## **SCIENCE**

### **Science of Hand Therapy**

Science can be defined either from a theoretical or experimental frame of reference, but it is essentially based on "unprejudiced free inquiry" (L. Bodell, personal communication, July 2007). The nature of science has many meanings and has evolved over time. For the purpose of this discussion, I accepted the view that science is a disciplined methodology and is associated with a particular set of procedures that are usually experimental to explore, confirm or refute theories of behavior, often applied to any procedure or belief that has rigor, precision, and is objective.<sup>14</sup>

As MacDermid discussed in her Nathalie Barr Lecture, 2005<sup>20</sup>: The success of hand therapy hinges on the three core foundations of transdisciplinary knowledge sharing and collaboration; evidence-based decision making; and patient centeredness. From this model, the mind–body and



client-centered approach are part of the core functions along with the science of hand therapy. They complement each other. The role of the hand therapist assessing hand function using measurements that can be easily compared between one treatment and the next is essential to provide objective data and to identify functional abilities, limitations, and activities for an intervention plan that is meaningful and client-centered. But of importance is the value of client-centered therapy involving the unity of body and mind with the aim to view and treat clients with consideration of the emotional, cognitive, social, and physical concerns.<sup>19,21</sup> This is consistent with looking at the total person holistically. We must see and accept our patients from their world and values, with a phenomenological perspective, to learn about their occupations to help each client succeed and reach his or her goals.

The late Dr. Paul Brand was an inspiration of my practice. Dr. Brand was a missionary as well as a hand surgeon, well known in both arenas. He was an advocate for the importance of objective measurement; yet, he never lost sight of viewing the whole person, at the same time. The mind and the person's attitude and how these factors contribute and affect the client were considered in the treatment.<sup>2</sup> Brand believed that "the idea of including more mind body into your treatment is not a retreat from objectivity in measurement as there is no better way to know whether the best treatment is being used" (p. 145 in Ref. 2). He wrote that, "we must resist our tendency to reject consideration of things we cannot quantify" (p. 145 in Ref. 2). To the younger therapists in this audience, I urge you to find his writings, his teachings; study and learn from them.

The science of hand therapy may stem from a reductionistic perspective; and we must adhere

to the science of hand therapy, and find the evidence. But we also must adhere to the art of hand therapy that allows us to consider the mind and body, and occupations of our patients. I propose it is not a conflict to make that bridge between the two paradigms. The importance of complex reasoning includes the more subjective experiences that must be acknowledged and that there is more than just the impairment measures being taken. For example, in his work with musicians, we learn from neurologist Frank Wilson,<sup>16</sup> about the emotional concerns of such individuals as musicians, sculptors, artists, woodcarvers, jewelers, and surgeons when they have a hand injury. He wrote of the passion such individuals have and how any physical change in the working of the hand can affect such persons physically and emotionally if they develop a disabling hand condition such as musician's dystonia, or other repetitive strain injuries. From Lundborg,<sup>22</sup> we learn that the hand may be regarded as an extension of the brain and, to have well-functioning hands is considered a prerequisite for each individual to be able to participate in life's occupations that can be done when we treat the whole person. We know this to be true just by the work we do every day in our clinics and it is what keeps us the therapists that we are. We, hand therapists, are fully invested in applying science and the art of caring as we deal with the complexities and the surprises of the mind that are connected to the body that we are treating, everyday. This information I share with you today is not new, as I have been reminded through my readings during preparation of this talk. It is important for us to be reminded again and again not to let the business of hand therapy interfere with our holistic approach to patient care.

## Finally, Exploring to Find the Evidence!

Now I am involved with finding the evidence for a method we use in therapy, which to be honest, are quite mechanistic studies, but the evidence is needed. I feel like a detective when I get on the search engines to look for needed references for a particular topic I am searching. It is really fun to start sleuthing to find the background articles for a topic and I learn much more because of the process I use to do this. Such methods can and need to be used not only for the studies we use about the typical clinical measurement, but also to bring us more expert evidence to support the client-centered approach. Any one of us can do this, yet it does take time, a commitment to move past your comfort zone, and you need to be willing to take the time. It might mean working after hours at home—what a thought! Some of us do it all the time. When I started out as a young occupational therapist I would never have considered spending time outside of work looking up articles, doing some research, and trying to systematically review a topic. I challenge you all to be creative, instill mind-body holistic approach into your treatment, and consider the mind-body as you reach for the evidence in the art and science of hand therapy!

In closing, let us not forget hand therapy's own important pioneers such as Nathalie Barr, Maude Malick, Evelyn Mackin, Care Deleeuw, Gloria Devore, Kilulu von Prince, Lois Barber, and all of the previous Nathalie Barr Award recipients, as well as so many others who have contributed to our field, and to our profession. From the past to the present, these and so many others provided the base for us as hand therapists to incorporate a client-centered approach as we treat the whole person, and incorporate

the art and science of hand therapy. It is an honor to have received this prestigious award in such incomparable company and to share my thoughts with you, my esteemed colleagues.

## ACKNOWLEDGMENT

I never believed I would be standing here today with this highest honor from ASHT; the path bringing me to this point being far different than I ever imagined. My love and thanks go to my friends and mentors Sue Michlovitz, Joy MacDermid, and Jane Bear-Lehman, who had the faith in me to deliver this speech today! To my continued relationships that have flowered over the years with so many hand therapists, many of whom are here in the audience today. To you all, Thank you!

## REFERENCES

1. LeShan L. The mechanic and the gardener: Making the most of the holistic

- revolution in medicine. New York: Holt, Rinehart and Winston, 1982.
2. Brand P. The mind and spirit in hand therapy. *J Hand Ther.* 1988;3:145-7.
3. Brown P. Body and soul. *J Hand Ther.* 1996;9:201-2.
4. Cannon NM. Maintaining "excellence" in hand therapy. *J Hand Ther.* 1989;2(4):213-9.
5. deLeeuw CS. Looking back, looking forward: thoughts along the journey. *J Hand Ther.* 1996;9:6-9.
6. DeVore G. High level hand therapy: a matter of art and attitude. *J Hand Ther.* 1990;4:181-5.
7. Walsh MT. Clinical reasoning: the passion of practice. *J Hand Ther.* 1998; 11(4):244-50.
8. Kasch MC, Greenberg S, Muenzen PM. Competencies in hand therapy. *J Hand Ther.* 2003;16:49-58.
9. Carlson J (ed). *Complementary Therapies and Wellness.* Saddle River, NJ: Prentice Hall, 2003.
10. Davis CM. *Complementary therapies in rehabilitation: evidence for efficacy therapy, prevention, and wellness.* Thorofare, NJ: Slack, Inc., 2004.
11. Dear P. *Revolutionizing the sciences: European knowledge and its ambitions, 1500-1700.* Princeton, NJ: Princeton University Press, 2001.
12. Arikha N. *Passions and tempers: A history of the humours.* New York: Harper Collins Publishers, 2007.
13. Lindberg DC. *The beginnings of western science.* Chicago: The University of Chicago Press, 1992.
14. Wilson FR. *The hand.* New York: Pantheon Books, 1998.
15. JBdeCM Saunders, O'Malley CD. *The illustrations from the works of Andreas Vesalius of Brussels.* Cleveland: The World Publishing Company, 1950.
16. Hafen BQ, Karien KJ, Frandsen KJ, Smith NL. *Mind body health: The effect of attitudes emotions and relationships.* Boston: Allyn & Bacon Simon & Schuster, 1996.
17. Pert CB. *Molecules of emotion: The science behind mind-body medicine.* New York: Touchstone Press, Simon & Schuster, 1999.
18. Chopra D. *Quantum healing: Exploring the frontiers of mind/body medicine.* New York: Bantam books, 1989.
19. Finlay L. Holism in occupational therapy: elusive fiction and ambivalent struggle. *Am J Occup Ther.* 2001;55:268-76.
20. MacDermid JC. Maximizing upper extremity function: integrating our foundations, patients' goals, and evidence. *J Hand Ther.* 2005;19:46-50.
21. Britt Pipe Teri. *Fundamentals of client-therapist rapport [Chapter 8]*In: Cooper C (ed). *Fundamentals of Hand Therapy.* St. Louis: Mosby Elsevier, 2007.
22. Lundborg G. *Nerve Injury and Repair.* 2nd ed. Philadelphia: Elsevier Churchill Livingstone, 2004.