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Massage Mechanisms

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> "The skin, like a cloak, covers us all over, the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient of protectors.
> The whole body is covered by skin. Even the transparent cornea of the eye is overlain by a layer of modified skin. The skin also turns inwards to line orifices such as the mouth, nostrils, and anal canal. In the evolution of the senses the sense of touch was undoubtedly the first to come into being. Touch is the parent of our eyes, ears, nose, and mouth. It is the sense which became differentiated into the others, a fast that seems to be recognized in the age-old evaluation of touch as 'the mother of the senses'."
>
> - *Ashley Montagu*[3]

In a previous column, I touched on medical applications of massage that appeared in the indexed medical literature from 1997 to the present. Of 213 instances of medical goals addressed by massage, 155 (73%) were systemic rather than tissue-specific (clinical/orthopedic) interventions. Systemic treatment goals included increased well-being, stress and pain management, and improvements in self-image. These "systemic" effects of massage also are well-represented in the research reported by Tiffany Fields and the Touch Research Institutes (TRI).[5] The TRI home page highlights observations that massage therapy: facilitates weight gain in preterm infants, reduces stress hormones, alleviates depressive symptoms, reduces pain, improves immune function and alters EEG in the direction of heightened awareness.[5] With the above observations in hand, it seems time to consider mechanisms for the effectiveness of massage.

Tissue specific interventions (TSIs), while requiring understanding in anatomy and movement to implement effectively, are simpler conceptually. TSIs largely can be understood by reduction to specifics. The practitioner needs to be able to listen to client history, assess active and passive range of motion limitations,

look-up and implement special orthopedic tests as needed, and thus gain a working hypothesis of the location, extent and nature of injured tissue i.e. the "lesion" resulting in pain or limitation. I differentiate active and passive range of motion limitations because they differentiate between pain felt in a musculotendinous unit when it's actively contracting and pain produced in ligaments, joint capsules and antagonist muscles when they are passively stretched. I note "looking up" special tests because I am a believer in having and knowing how to use information resources rather than in memorizing everything in sight (or reach). Procedures frequently used will be memorized. I define the result of assessment as a "working hypothesis" to clarify that it's not a medical diagnosis.

With TSIs, the techniques follow from assessment and isolation of the lesion(s). Tendinosis on tendinous attachments benefits from the stimulation of inflammation by local friction.[1,2] Adhesions between fascial layers release under slow separating pressure. Trigger points succumb to ischemic pressure combined with various methods to lengthen the affected tissue. Muscle hypertension can be lowered by methods of positional release and post-isometric relaxation. The assessments and treatment might be intricate, but they are not inherently complex in the sense that we can conceptually connect the treatment goals and the intervention.

Understanding how non-tissue-specific touch affects the state of our human systems has not been so easy. We are able to record the effects, as has the Touch Research Institutes, but we haven't had a sound mechanism to explain them. My opening quote from Ashley Montagu motivates why touch would be expected to have profound effects on us, but it, too, stops short of mechanism. The answer, however, is starting to take shape in diverse venues of science and mathematics.

Over the last two decades or so, a new area of research has evolved. There are systems in which important properties lie, not in the individual parts alone, but in the interaction and communication between the parts. These properties have become known as "emergent properties," be cause they literally emerge from the complexity of interactions.[6] In 1984, the Santa Fe Institute was founded specifically to study such complex systems.[4] The April 2, 1999 issue of the journal *Science* was devoted to interdisciplinary viewpoints on research in complexity. These included papers on "Complexity and the Nervous System," and "Complexity in Biological Signaling Systems." Numerous papers and books have come out of studies of things describable as "information networks," including studies on organization spontaneously emerging in the structure of the Internet. We slowly are gaining the tools and the understanding that seemingly simple appearances can arise out of the complexity of interactions. We also are finding understanding that such

systems can have multiple stable states and flip between them depending on input from outside.

Thus, we come to the human body as a system of systems a system with neurological, chemical, immune, emotional and sensory interactions all communicating. Sensory input includes touch in a big way. We come back to the observations of TRI and Ashley Montagu, with the understanding of massage and touch as a major input to a complex system. We don't understand the details, but we understand the basis for touch to create profound changes in the homeostasis of the human system. There are important structures of the human body that are not physical; they exist only in the fluid interchange of information within the living system.

In the end, it's not the complexity of the touch being done, but the complexity of the human system being touched that is most profound. Someday, we might be able to model the complexity of neurological-chemical-emotional-sensory interactions to determine patterns of sensory input that are most effective at inducing positive change. We still are far away in the infancy of such concepts. The best tool we have to bring to bear today is the equal complexity of the observational instrument known as the human practitioner. The human ability to learn from practice and observation and then to react in real-time to sensory input remains unmatched. We are slow at consciously processing input, but rapid at "unconsciously" matching patterns. There is great value in being able to initiate a simple touch, judge the response and adjust our input toward assisting the client's system toward a better place. We've known this intuitively for a good while. We are just beginning to develop the scientific finesse to explain it.

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