The Human Movement System: Our Professional Identity.

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Perspective

The Human Movement System: Our Professional Identity.

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Abstract

The 2013 House of Delegates of the American Physical Therapy Association adopted a vision statement that addresses the role of physical therapy in transforming society through optimizing movement. The accompanying guidelines address the movement system as key to achieving this vision. The profession has incorporated movement in position statements and documents since the early 1980s, but movement as a physiological system has not been addressed. Clearly, those health care professions identified with a system of the body are more easily recognized for their expertise and role in preventing, diagnosing, and treating dysfunctions of the system than health professions identified with intervention but not a system. This perspective article provides a brief history of how leaders in the profession have advocated for clear identification of a body of knowledge. The reasons are discussed for why movement can be considered a physiological system in addition to the advantages of promoting the system rather than just movement. In many ways, a focus on movement is more restrictive than incorporating the concept of the movement system. Promotion of the movement system also provides a logical context for the diagnoses made by physical therapists. In addition, there is growing evidence, particularly in relation to musculoskeletal conditions, that the focus is enlarging from pathoanatomy to pathokinesiology, further emphasizing the timeliness of promoting the role of movement as a system. Discussion also addresses musculoskeletal conditions as lifestyle issues just as has been demonstrated that general health is clearly related to lifestyle. The suggestion is made that the profession should be addressing kinesiopathologic conditions and not just pathokinesiologic conditions as would be in keeping with the physical therapist's role in prevention and as a lifespan practitioner.

The 2013 House of Delegates,(HOD) adopted a new vision statement for the profession when it passed resolution RC14-13. The resolution states that, "The physical therapy profession will transform society by optimizing movement to improve health and participation in life."[1] The adoption of this new vision statement unflinchingly affirms that movement is indeed the essence of physical therapy. The 2013 HOD also passed RC 15-13, a resolution that stipulates the guiding principles of the vision statement.[2] The guiding principles are introduced by the following statement:

> *"The physical therapy profession's greatest calling is to maximize function and minimize disability for all people of all ages. In this context, movement is a key to optimal living and quality of life for all people of all ages that extends beyond health to every person's ability to participate in and contribute to society."*

The resolution goes on to specify the profession's inextricable connection with the Movement System.

> *"Identity: The physical therapy profession will define and promote the movement system as the foundation for optimizing movement. The recognition and validation of the movement system is essential to fully understand the physiological function and potential of the human body. The profession will be responsible for monitoring an individual's movement system across the lifespan in order to promote optimal development,*

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diagnose dysfunction, and provide interventions targeted at preventing or ameliorating restrictions to activity and participation. The movement system will form the basis of practice, education and research of the profession."

Given the profession's recent statement of identity with the movement system, a commentary on the topic is particularly timely. The purposes of this perspective are to 1) review the evolution of thinking within the profession about the movement system, 2) offer a rationale for defining the movement system as a physiological system, 3) propose a model of the movement system, 4) advocate for promoting both kinesiopathology and pathokinesiology as important movement system concepts, and 5) explain why I believe the movement system must be embraced by physical therapists who seek to achieve the full potential of their critically important role in society.

Evolution of Thinking about the Movement System

From Technicians to Professionals

The actions taken by the 2013 HOD reinforce what every physical therapist knows and what has been incorporated in HOD policies since the 1980's. Movement is the core of physical therapy. [1,2,6,15] Because the concept of movement as a body/physiologic system may be less familiar than the concept of human movement itself, a brief review of our history is needed! You will see that the evolution of our profession has benefited from the insights and contributions of many individuals. Unfortunately many of those individuals have not lived to see how their prescient ideas have been manifested. But we need to review the legacy they left for

us so we all understand how we evolved to this point.

The newly adopted Identity statement in RC 15-13 is the culmination of an amazing transformation of physical therapy from a technical field to an identified profession. This latest HOD action associates our profession with a system of the body. I think this is an incredibly important step in establishing our unique role in health care. In the early 1960's a representative of the Department of Labor observed me performing patient care. The representative was doing an analysis to determine whether physical therapists were technicians or professionals. This observational study established the rather obvious fact that physical therapists made decisions as part of their patient care process. These observations resulted in our designation as professionals, not technicians. Nonetheless, a "prescription" from the physician was still required to initiate physical therapy (PT). The normative practice at that time, was for a physician to establish a diagnosis and prescribe treatment prior to referring the patient to PT. However, Catherine Worthingham's historic study and publication in 1970 demonstrated that most of the referrals to physical therapy did not include either a diagnosis or a specific treatment program[3]. Thus by the mid-1970's, physical therapists were beginning to emerge from an era in which physician prescription dominated decisions about patient management.

Identifying Our Body of Knowledge

During this time, the APTA and some of our most visionary leaders were asking important questions about the identity of our profession and the body of knowledge that supports our work. Dr. Helen Hislop PT, PhD, FAPTA, who stated during her 1975 McMillan Lecture that the profession was experiencing an identity crisis made a major contribution to our professional discussion when she proposed the idea that pathokinesiology, (the study of anatomy

and physiology as they relate to abnormal human movement), is the foundation science of the profession.[4] Though her lecture often has been cited for the power of her recommendations, there is little evidence that her directives had a specific impact on the general direction of the profession at that time. In the 1980 Mary McMillan Lecture, Florence Kendall PT, FAPTA discussed the importance of the profession establishing a relationship with a system of the body and cited the example model of medical specialists who were easily recognized by their system, eg. cardiologists and neurologists.[5] However, her recommendation that the musculoskeletal system be designated as the focus of the physical therapy profession seemed to exclude those who were involved in treating patients with neuromuscular or cardiovascular and pulmonary conditions. Consequently, her recommendation was not readily adopted.

The identification of Physical Therapy's body of knowledge was addressed again when specialty sections were evolving and PT's were researching and documenting advanced and specialized PT practice. As implied by the names of the Sections and certified specialty areas, the systems of the body or, the age of the individuals being managed are what classified the focused content areas rather than an overarching or unifying focus for the profession such as human movement. Each specialty has focused on the body of knowledge within a specific scope and many parallel traditional physician specialties. All of these attempts to capture the essence of the profession in the 1980's resulted in recognition of the need to define the fundamental philosophic position of the profession. The 'Definition of Physical Therapy Task Force' was appointed by the Board of Directors in early 1980. As a result of the Task Force deliberations that included input from across the Association, the following philosophic position was adopted by the 1983 House of Delegates:

"Physical therapy is a health profession whose primary purpose is the promotion of optimal human health and function through the application of scientific principles to assess, correct, or alleviate acute or prolonged movement dysfunction."[6]

Since it was adopted originally, the statement has been modified twice to make it consistent with other policies and documents, including the Guide to Physical Therapist Practice[7], the International Classification of Functioning, (ICF)[8], and Vision 2020[9]. As is evident in the most recent version below, some of the wording has been changed but the focus is still on movement and the remediation of impairments.

> "PHYSICAL THERAPY AS A HEALTH PROFESSION HOD P06-99-19-23 [Initial HOD 06-83-03- 05][10]
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> *Physical therapy is a health profession whose primary purpose is the promotion of optimal health and function. This purpose is accomplished through the application of evidence-based principles to the processes of examination, evaluation, diagnosis, prognosis, and intervention to prevent or remediate impairments in body structures and, activity limitations, participation restrictions or environmental barriers as related to movement and health."*

While there has been evolving professional agreement regarding the overall concept of

human movement as our professional focus referenced above, there has been less agreement about how to organize, describe and label that body of knowledge. At the 1984 Annual Conference, the concept of pathokinesiology was revisited at a symposium titled, "Pathokinesiology: Theory, Research, and Practice". The presentations were published subsequently in the *Physical Therapy Journal, (PTJ)l*.[11] Some of the questions that were addressed were the following: 1) What is pathokinesiology?, 2) Does pathokinesiology have the potential to be our basic science?, 3) Is pathokinesiology central to our profession's identity?, and 4) What are the implications for our body of knowledge? In his introduction to the collection of papers in *PTJ*, Rothstein noted that, "the professional identity crisis first identified by Hislop 10 years earlier had worsened. We, as therapists have not developed a true sense of who and what we are. We are defined by the tasks we do, we have many faces and no singular image".[11]

One explanation for the limited acceptance of the pathokinesiology concept as our professional identity was its emphasis on pathology that produces abnormal human movement. Even though the term appropriately focused us on movement, it was not broad enough to encompass the full scope of the profession. The narrow definition, 'study of abnormal movement resulting from pathology' lacks consideration of broader concepts such as the study of conditions that are produced by imprecise or insufficient movement or immobility, (kinesiopathology) or, the study of prescribed movement to enhance task specific performance or, the study of movement essential to prevention of movement related disorders.

The Scope of Human Movement

In the early 1990's, a group of individuals who were motivated by the untimely death of

Steve Rose, PT, PhD, FAPTA, gathered to continue developing the ideas of professional identity proposed by Dr. Rose. The group included Sandy Burkart PT, PhD, Tony Delitto PT, PhD, FAPTA, Marilyn Gossman PT PhD, FAPTA, Andrew Guccione PT, PhD, FAPTA, Scot Irwin PT, DPT, CCS, Colleen Kigin PT, DPT, FAPTA, Eugene Michels PT, PhD, FAPTA, Cyndi Zadai, PT, DPT, FAPTA, myself and several others. One of the group's major conclusions and recommendations was that the profession should develop and promote the concepts of a movement system and movement science. The group presented these concepts at several national meetings and published a special edition of the Journal of PT Education in 1993 illustrating how these concepts could be integrated into professional entry-level education[12] . These initial explorations into the concept of the Movement System as an integrating focus for professional PT practice initiated what has been a somewhat slow but steady progression toward that goal.

By the mid 1990's, the APTA had successfully completed and published the *Guide to Physical Therapist Practice*, *(Guide*) which authentically described the basic scope and content of practice including patient/client management by physical therapists[7] Although the description is broad regarding the general examination, evaluation, (including diagnosis, prognosis and plan of care), intervention and outcome phases of physical therapist practice; the care management model is clearly focused on the evaluation and management of the human movement system. The *Guide* practice patterns identify patients and clients across the spectrum of individuals who benefit from PT management to prevent and treat movement system disorders. The *Guide* does not however represent a full spectrum description of the human movement system and it is not a complete or specifically descriptive manual for identification and treatment of movement system diagnoses.

During the 1990's we again made progress toward our goal of adopting a Movement System focus when Scot Irwin became a consultant for Steadman's Dictionary. In his consultant role, he had an opportunity to recommend inclusion of the term "movement system" if a definition could be developed. With Florence Kendall's help, the following definition was developed and published in the dictionary.[13]

> "The movement system is a physiological system that functions to produce motion of the body as a whole or of its component parts. The functional interaction of structures that contribute to the act of moving".

The value of this definition is that it: 1) describes a physiological system of the body, 2) applies to movement at all levels of bodily function, subcellular, cellular, and system, as well as, to interaction of man with his environment, and 3) applies to dysfunction or impairments in all the systems that contribute to movement (e. g., ACL insufficiency, pulmonary dysfunction, etc.). Most importantly, the concept provides a focus for the primary expertise of all physical therapists.

In the 1998 Mary McMillan Lecture[14], I presented my conception of the movement system but the issue was not discussed again at a national level until 2004 when Cynthia Zadai delivered the John H. P. Maley Lecture.[15] Dr. Zadai discussed the value of describing a Human Movement System with special emphasis on the word "human". She included comments on why it could be difficult to identify and consistently label the essential structures and functions comprising the movement system to include both normal and abnormal functions across the lifespan, but also stressed the importance of moving forward with the concept. Motivated by Dr. Zadai's 2004 Maley Lecture, titled, "Disabling our Diagnostic Dilemma", in 2006[16] Barbara

Norton, PT, PhD, FAPTA, organized a series of invitational conferences called Diagnosis Dialog. The purpose of the conferences was to clarify many issues related to diagnosis in Physical Therapy. These conferences included approximately 35 leaders of the profession from across the country. Through many hours of discussion and debate regarding classification and labeling of the phenomena that are managed within the scope of PT practice, the primary point of agreement with the majority of the participants was that the Movement System is the fundamental system of physical therapy.[16,17]

Most recently, as noted at the beginning of this article, the 2013 HOD adopted a new vision and a new identity for the entire profession. The newly adopted resolutions are the culmination of ideas that began percolating in the 1960s. The latest HOD actions are incredibly important steps in establishing our unique role in health care. Now we need to move forward with RC 15-13. We need "to define and promote the human movement system as the foundation for optimizing movement" and our professional identity.

Rationale for Defining the Movement System as a Physiological System

Is the concept of a movement system consistent with the definition of a system?

According to the American Heritage Dictionary[18] a system is defined as: "*1) A group of interacting, interrelated, or interdependent elements forming a complex whole; 2) A functionally related group of elements, especially: a. The human body regarded as a functional physiological unit, b. An organism as a whole, especially with regard to its vital processes or functions, c. A group of physiologically or anatomically complementary organs or parts: the nervous system; the skeletal system.*" Using these criteria for a system, the movement system concept meets the

requirements because it is a group of functionally related interacting, interrelated, and interdependent elements forming a complex whole, which produces the function known as movement.

Can the Movement System Be Considered a Physiological System?

According to the Random House dictionary,[19] physiology is "*1) the branch of biology dealing with the functions and activities of living organisms and their parts, including all physical and chemical processes; 2) the organic processes or functions in an organism or in any of its parts*." Movement is a function of an organism that is produced by a set of interacting organs and systems. Thus, the set of interacting organs and systems that produce movement is a physiological system that can be appropriately labeled the movement system. Recognition of this system will require that all members of the profession, clinicians, academics, and researchers promote and incorporate the concepts in their publications and communications with the public, patients, and other health professionals. Repeated and frequent use of the term and application of the concepts are necessary to achieve widespread recognition.

Proposed Model of the Human Movement System

One possible form of illustrating the components of the human movement system is shown in Fig 1. The muscular, nervous, and skeletal systems are the main effectors of movement and thus play a key role. The interaction of the structures and functions of the musculoskeletal and nervous systems produces the visible components of the movement system from static postures through performance of purposeful activity at the level of the person. The endocrine, cardiovascular and pulmonary systems are the fundamental systems responsible for

uptake and delivery of oxygen and metabolically active substances required for generating and maintaining movement and are therefore necessary for the sustenance and maintenance of movement. Additionally, all these systems are affected by movement, for without adequate movement, they deteriorate.

Movement System Concepts Applied Across the Practice Spectrum

Hislop's pathokinesiology model was consistent with traditional physical therapy and medical practice at the time. A physician diagnosed the pathological condition. If the pathological condition resulted in a movement dysfunction, the patient was referred to a physical therapist who treated the movement dysfunction. For example, the physician would diagnose a cerebral vascular accident and the therapist would treat the resultant hemiparesis. The diagnosis of cerebral vascular accident from the physician was not always helpful for directing physical therapy management because it did not provide details about the movement dysfunction. Hislop's proposal of 'pathokinesiology' projects that physical therapists were in the best position to examine and understand the details of the movement problem that was induced by the pathologic lesion; hence she coined the term pathokinesiology and proposed adoption of the term to describe the foundational science conceptually focusing our profession. Although her model was important in many ways, the model did not incorporate the notion that imprecise movement, or lack of movement, (immobility), related to life style could also lead to pathology (kinesiopathology). Similarly, it did not include the improvement of movement performance when applied to task specific training, or prevention concepts related to movement dysfunction.

Over the past 50 years, one of the major transitions in thinking about the causes of pathology has been the increased emphasis on the role of movement related to life style as a

factor in inducing pathology. Prior to the 1960's and even 1970's most people did not realize that movement related to their lifestyle had anything to do with their hypertension, diabetes, or health, in general. I began my career as a PT in the Department of Preventive Medicine at Washington University School of Medicine. One member of the department, John Holloszy, MD, was doing research that is now designated as translational research. With his studies in both rats and humans, he was amassing evidence to support the hypothesis that exercise was the key factor in preventing and reversing many of the disorders of the cardiovascular and endocrine systems. His research clearly demonstrated both: 1) the benefits of exercise in preventing and ameliorating conditions such as hypertension, cardiac disease, and diabetes, and 2) the mobility/immobility mechanisms by which change was induced in the endocrine system.[20,21,22]

Another example is the musculoskeletal conditions that are affected by movement related to life-style. Evidence is emerging that aspects of femoroacetabular impingement are related to participation in certain sports activities.[23,24,25] In addition, several shoulder pain syndromes have been shown to be associated with deficiencies in scapular motion.[26] Studies that demonstrate the relationship between movement and pain problems will most likely provide the evidence needed to redirect the thrust of examination and treatment from primarily focusing on assessment of the structural variation in pathologic conditions requiring arthroplasty, to identifying and correcting the movement problems that may be contributing to creating or compounding structural abnormalities.

The emphasis on movement related to lifestyle and its potential for associated pathology underlines the importance of adopting the Movement System as the identifying focus for the profession. Scientific focus on movement system performance as a whole, or, at the level of the component parts, encompasses the breadth of the clinical science beginning with the growth and

development of the movement system through the prevention and management of movement related disorders. Such clarification and focus on the depth and breadth of the system would also provide the basis for the role of the physical therapist as a lifespan practitioner[27].

The Compelling Case for Embracing the Human Movement System as the Foundation for PT Practice, Education, and Research

What are the advantages of associating physical therapy with a system of the body?

1. ***Professions that have minimal difficulty gaining recognition for their expertise are associated with a physiological or anatomical system of the body***. The expertise of the cardiologist, the neurologist, and even the dentist is well understood. Their professional title connotes the system for which they are responsible. The title of physical therapist does not provide ready association with content expertise. This point has also been addressed in a recent editorial by Jull[28] indicating there is international concern about this issue. The APTA, efforts at branding movement [29] could just as easily, and in the long run more advantageously, be used to promote the concept of the movement system as the foundational scientific construct for describing, defining and testing examination and intervention strategies focused on optimizing human movement. Acceptance of new terminology is just a matter of information dissemination and publicity. We all know how well Google and Apple have demonstrated the point.

2. ***Association with a body system provides a parallel to the role of other doctoring professions***. Just as the neurologist is responsible for the science, theory and medical practice focused on the anatomic and physiologic functions and dysfunctions of the nervous system, the physical therapist would have similar responsibility for the movement system. Rather than the neuropathologic diagnosis and pharmacologic or surgical intervention plan produced by the physician, the PT would provide a Movement System examination, diagnosis, prognosis and intervention plan including the projection of outcome. Movement is a highly desirable, non-invasive form of intervention that requires an equally specific prescription based on reliable and valid test findings wherever possible.

3. ***Currently identified and validated PT specialties are essential to the comprehensive management of the Human Movement System over the course of the lifespan.*** The descriptions of physical therapist advanced clinical practice have nicely illustrated the integral relationship between physical therapist practice and the movement system. A cursory or in-depth review of the American Board of Physical Therapy Specialties (ABPTS) examination blueprints and highlights the focus of each area of practice to indicate that they collectively represent examination, evaluation and management of movement related normality and abnormalities of structures, functions and person level performance across the lifespan.

4. ***The Movement System concept provides a context and format for describing diagnoses within the scope of physical therapy.***

In 1982, the House of Delegates stipulated that physical therapists must establish a diagnosis.[30] While the medical profession has spent hundreds of years describing and testing pathologic phenomena to develop elaborate diagnostic manuals describing abnormalities of structure and function from the cellular through the system level, physical therapists have only begun to develop some detailed descriptions of Movement System functions and dysfunctions across multiple levels. Identifying movement as a body system with its appropriate structures and functions would help clarify the scope of practice and provide an outline and rubric for developing detailed and testable descriptions of normal and abnormal movement.[14,31] To help start the process of creating a diagnostic classification for movement system phenomena, the Diagnosis Dialog group has been meeting once or twice a year since 2006 to identify, describe and develop specific movement system diagnostic labels that could be used by Physical Therapists.[16,17].

5. ***Physical Therapy's identity as a profession will be enhanced when other health professionals can identify/recognize our expertise.*** Taking on the responsibility for defining and describing components of the movement system emphasizes our professional ability to contribute to the creation of evolving clinical science and theory within a specific scope. Developing and disseminating information about the movement system and the role of the physical therapist was highlighted in a recent editorial by Paula Ludewig, PT, PhD, titled, "What Is in a Name: Movement System Diagnoses vs.

Pathoanatomic Diagnoses?"[32], Dr. Ludewig makes an important point about the value of developing and using diagnostic labels that are focused on the phenomena we are treating rather than the diagnostic labels naming pathologic structures, particularly those treated by other professionals. Dr. Ludewig states, "physical therapists treat movement-related impairments rather than structural anatomical abnormalities. As such, using a pathoanatomic model to define physical therapy–related diagnostic labels creates a disconnect between our diagnostic and treatment processes."[32]. There is clearly a growing recognition that pathokinesiological problems are a significant source of musculoskeletal pain that should be addressed rather than exclusively focusing on pathoanatomical problems[33, 34]. If we are able to successfully define the components of the movement system such that they can be reliably tested and validly treated we will be illuminating that area of human function and be recognized for that expertise.

6. ***Recognition for contributing to clinical science in a manner that benefits patients, clients and other health care practitioners.*** As the profession pursues scientific development of the movement system including description of normal and abnormal functions and identification of the prevalent diagnostic categories; labeling the identified components with Movement System terms will avoid the pitfalls of labels that are 'profession specific', (e.g. PT diagnosis). Profession specific terms can be exclusionary and discourage other health care professionals from learning

about the movement system or recognizing those diagnoses as an indication to refer to the PT. Although, other health practitioners and the public may currently not know what a movement system diagnosis is, that can be remedied by description, publication, dissemination and clinical utilization of the language. For example, less than 15 years ago, the term, "metabolic syndrome"[35] was not commonly recognized as it is today. Less than 10 years ago few individuals had heard of FAI, now known commonly in the community as femoroacetabular impingement[23, 24] .

Relationship to Movement Science

In 1989, when the Washington University Program in Physical Therapy initiated its PhD program in Movement Science, the concept was new. We were advised by our colleagues in basic science departments that this would be a desirable label because the content would lend itself to inclusion in other basic science departments. They advised against such terms as a PhD in Physical Therapy or even Rehabilitation because of the lack of reference to a basic body function. Over the years, other institutions have also established movement science degrees. Movement science must necessarily be the study of the movement system just as neuroscience is the study of the nervous system. How fortunate I have been to witness the transition in the profession from technician to a professional because of our decision-making responsibilities. The transition has continued so that now we are able to describe and promote our responsibility for a system of the body.

Final Comments

As Dr. Zadai said in her Maley lecture, "We need professional and public recognition for who we are and what we do. Physical therapists need to own the human movement system and its management from the science to the practice".[15] Indeed owning the human movement system would also provide a context for education. One of the important issues in education is whether adequate attention is devoted to analysis of movement and development of interventions that foster correction of problems induced by imprecise movement. Based on my 30 years of experience in teaching continuing education courses, I believe that PT clinicians need additional skill in clinical observation of movement during their examination of patients. We should incorporate more detailed observation and analysis of movement while patients perform functional activities into standardized PT examinations. I believe many therapists currently take Feldenkreis and Pilates courses because they have not received adequate education in developing a basic exercise prescription, much less, strength and conditioning programs.

I am convinced that Physical Therapist development of movement system diagnoses and education in management of those diagnoses rather than the current emphasis on pathoanatomic diagnostic processes and phenomena would produce a focused and skilled PT practitioner. Medical education certainly includes basic science and pathophysiology primarily to understand described diseases and syndromes. The education also focuses on examination to identify those specific diagnoses of anatomical and physiological systems and on treatment. Physical therapy education should emphasize diagnosing syndromes of the human movement system and not focus primarily how to treat conditions based on another health professional's diagnosis. These are only a few suggestions from one person's perspective. What is important is to obtain the perspective of all of the appropriate physical therapy communities. Those in academia should

provide their ideas about what would be different or stay the same given the adoption of our new vision, just as those in clinical practice need to assess the implications not just for examination and treatment of individuals, but also for our communication within and outside the profession. In many ways, those in the research community are already contributing to the movement system by their studies in movement science.

The action by 2013 House of Delegates reinforces what every therapist knows and what has been incorporated in House of Delegates policies since the 1980's. Movement is the core of physical therapy[1, 2, 6, 10]. The movement system is important for function at all levels of the organism and for life. Because of the importance of this system to health and function, physical therapists are obligated to monitor patients' movement system across the lifespan, to guide optimal development, to aide prevention, and to diagnose and treat dysfunction and/or impairments. This type of practice will enable the physical therapist to play a key role in optimizing and restoring function, preventing further dysfunction and promoting overall health. The HOD and the Board of Directors of the APTA have taken major steps in defining and developing the profession's identity as associated with the movement system. A Board Work Group has been appointed to "define the term 'movement system' and develop the framework for a short- and long-term plan for promoting and integrating the concept of the movement system into physical therapist practice, education and research." The recommendations from this work group and the subsequent actions by the Board of Directors will be effective only if the entire profession joins the effort to use, apply, and communicate the concepts of the human movement system.

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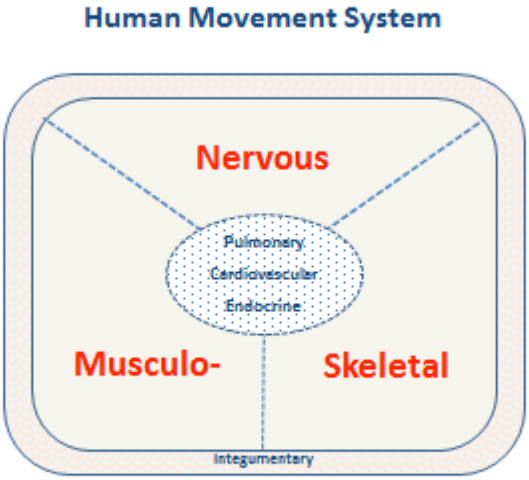

Figure. The human movement system: a system comprising movement-related physiological organ systems. The primary effector systems are the musculoskeletal and nervous systems, and the primary support systems are the respiratory, cardiovascular, and endocrine systems. The effector systems produce movement; both effector systems and support systems are affected by movement.

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