

Moving Precisely? or Taking the Path of Least Resistance?



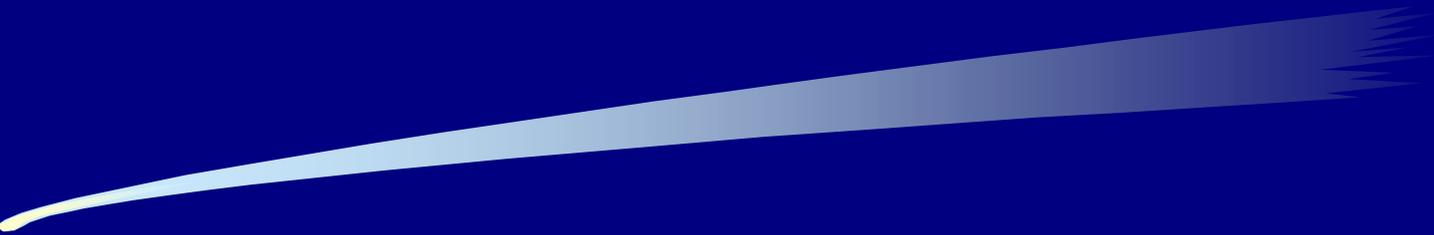
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The path of physical therapy over the past 48 years

- Change from
a clinically driven
profession to
an academically
driven profession





Health and Exercise

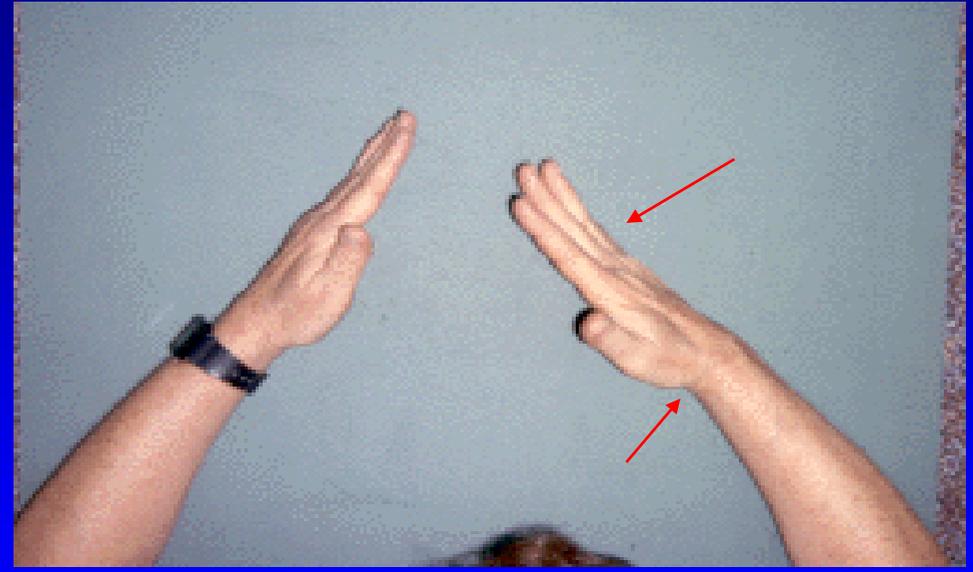
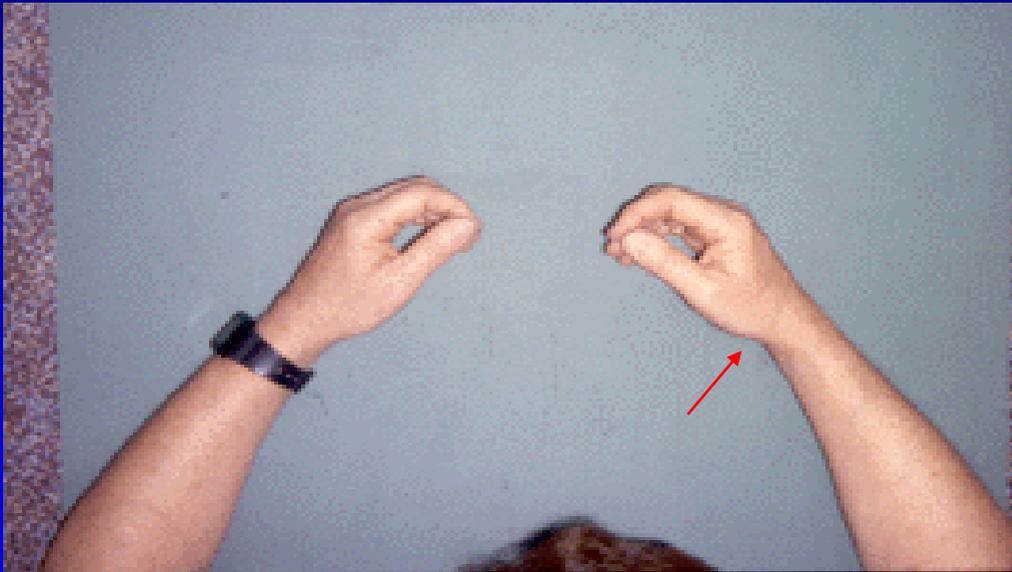
- Perfect time as prevention continues to be the emphasis
- Role of exercise
 - In disease prevention
 - Is increasingly recognized
- Clinicians and academics must work together

Moving Precisely? or Taking the Path of Least Resistance?

- Insights from observing impaired movement patterns in myriads of patients



Compensatory Motion During Finger Extension



Path of Least Resistance

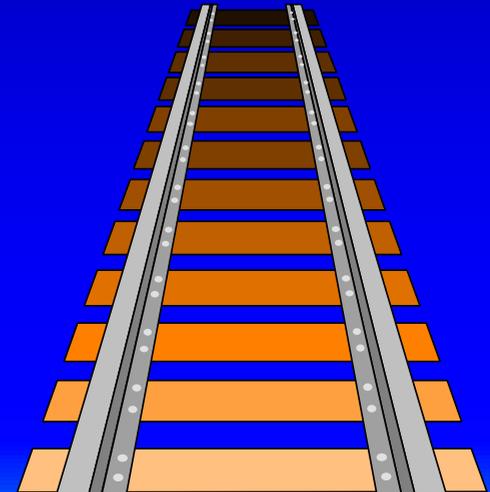
- Occurs at hyperflexible joint
- Joint moves when should be stable
- Easy to move along path of least resistance
- Not always the precise path
- Leads to undesirable outcome
- Easy to overlook
- Correct path early to restore precise path easily

Move to Academically Driven Profession

- Ease determined by
 - Past experiences, Current influences, Visions of the future
 - How they affect our
- Identity, Clinical Science, Academia, Practice

Professional Considerations

- Whether relatively small changes in path
- Can either
- Compromise or
- Secure
- Our place in health care
- For next century

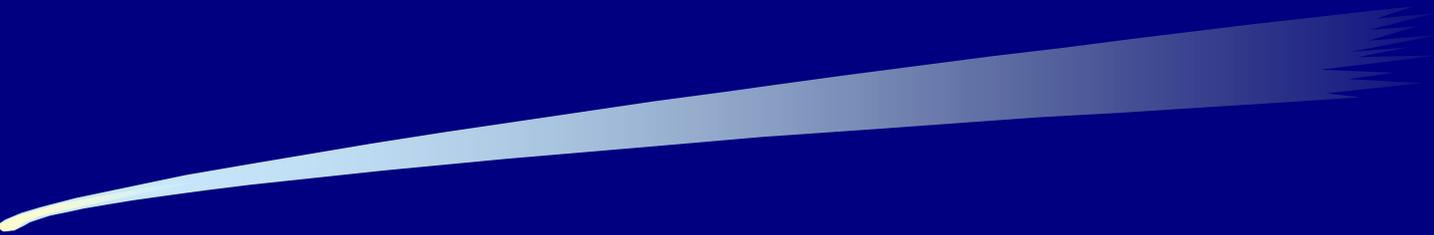


Professional Identity of Physical Therapy



Professional Identity

- Move Precisely
 - Continue to develop the concept of movement as a physiological system
- Take the Path of Least Resistance
 - Limit our idea of movement to a phenomenon
 - Becomes impaired by lesion in specific system
 - Musculoskeletal pain – single episode of tissue inflammation and/or restriction



Pathokinesiology

- The defining science of Physical Therapy
 - Helen Hislop, PhD, PT, FAPTA
 - 1975 Mary McMillan Lecture

APTA Philosophical Statement

- Physical Therapy is a health profession whose primary purpose is the promotion of optimum human health through the application of scientific principles to prevent, identify, assess, correct, or alleviate acute or prolonged movement dysfunction.
 - House of Delegates 1983

Movement System

- 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
 - Stedman's Medical Dictionary

Importance of Movement as Physiological System

- Concern about future expansion of education and practice unless role is defined
- Medical specialties are based on body systems
 - Florence P. Kendall, 1980 McMillan Lecture
- Almost all well established and accepted health professions have defined their role
- Experts on anatomical or physiological system

Implications for Practice and Education

- Concern with impairments that adversely affect movement
- Concern with how movements **cause** impairments that can result in disease & pain disability
- Clinicians and researchers must work together
- To elaborate all the functions and dysfunctions of the movement system

To be Respected for Knowledge of Movement System

- Elucidation of mechanisms of impairments
- Use of movement as a tool
- Increased knowledge of physiology and biomechanics of the system
- Increase our diagnostic tools - radiological
- Increase our treatment methods - pharmacological

Practice Based on Movement System

- Requires consideration of the effect of all components involved in system function
- Similar to consideration of
- Gastrointestinal, genitourinary, cardiopulmonary in affecting pH, regulated by metabolic system

Failure to Consider All Components of Movement System

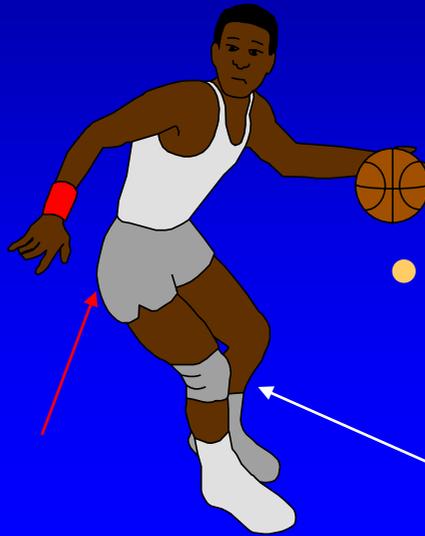
- Patients with hemiplegia
 - “Tone” entirely attributed to spasticity a dysfunction of central nervous system
 - Secondary muscle changes (Dietz) overlooked
- Patients with musculoskeletal pain syndromes
 - Movement problem attributed to soft tissue dysfunction
 - Motor control contribution (Babyar)

Cause versus Source

Operational Definitions

Cause

- the mechanical factor (movement) that results in tissue irritation
- e.g. lumbar extension, femoral anterior glide, tibiofemoral rotation syndromes



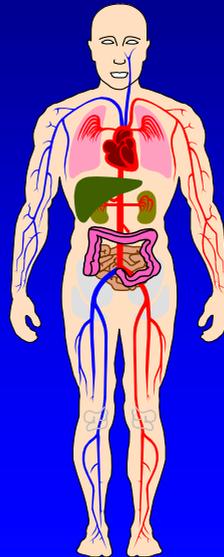
Source

- the tissue or pathoanatomical structure that is symptomatic
- e.g. facet syndrome, iliopsoas tendinopathy, chondromalacia

Components of Movement System

- Muscular, Neurological, Cardiopulmonary, Metabolic Systems
- Must consider their role and their interactions
- To move precisely toward the level of professional identity needed for next century

Physical Therapy Clinical Science



Clinical Science

- The study of the signs, symptoms, and course of the patient's disease or dysfunction
- the integration of foundation sciences with our clinical knowledge and procedures
 - Task Force on Content of Post baccalaureate Degree Entry-Level Curricula

Clinical Science-Move Precisely

- Continuing to develop our clinical science
 - Incorporating and integrating current knowledge from the basic, medical, and social sciences into therapists understanding and communication
 - Conducting clinical and basic research related to the movement system

Clinical Science-Move Precisely

- Emphasizing treatments with a rationale scientific basis as opposed to those for which explanations require large leaps of logic or are based on pseudo-science
- Providing students with multiple opportunities to defend treatment choices based on clinical science

Clinical Science - We must not Take the Path of Least Resistance

- Teaching basic science without noting ways that science can explain clinical conditions and methods
- Failing to provide current pathophysiological information about impairments of the movement system

Clinical Science - We must not Take the Path of Least Resistance

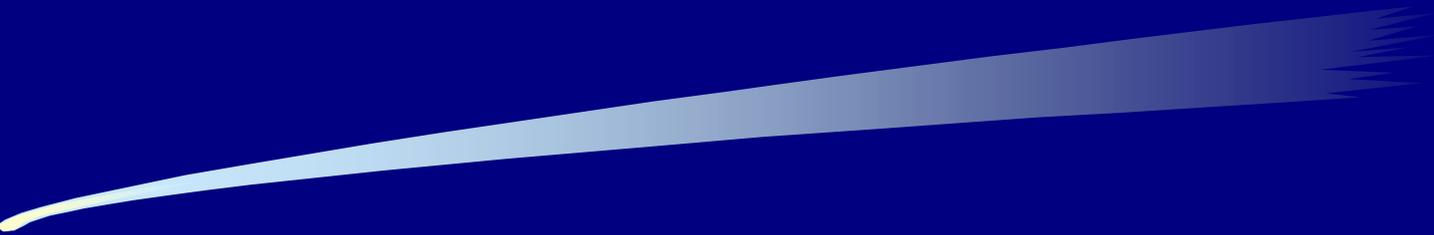
- Teach clinical techniques without critical analysis of their effect on the impairments for which the patient is being treated
- Expecting the student to apply information obtained in the basic sciences to clinical practice independently

PT Education in the 1950's

- Anatomy – lots
- Physiology – primitive
- Therapeutic exercise
 - Passive, active-assistive, active, resistive
- Skill in manual muscle testing for strength and length

Change in Patient Population

- Patients with polio - decreased
- Patients with hemiplegia - increased
 - lost confidence in clinical skills
 - my basic knowledge and skills no longer applicable
 - did not understand underlying mechanisms



Clinical Dilemma

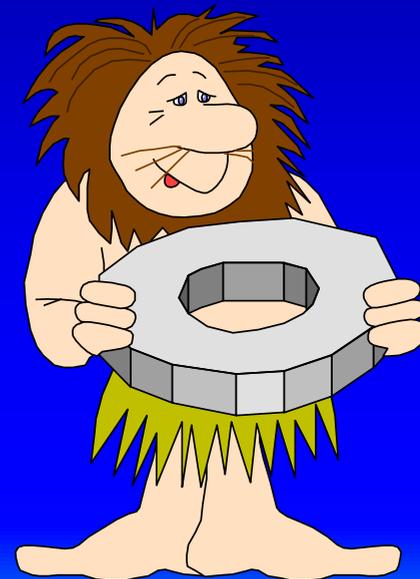
- Clinical technique courses not available
- Pursue graduate education
 - To investigate mechanisms
- Understand underlying mechanisms
 - Design appropriate intervention

State of Clinical Science

- 1975 State of disarray
 - lack of identity
 - clinically driven
 - limited PhDs
- 2006 State of disuse
 - have not applied existing information
 - have not communicated using our basic science

Established Basic Science - Cellular & Clinical Manifestation

- use
- disuse
- stretch
- strain
- stiffness
- anatomical length adaptations



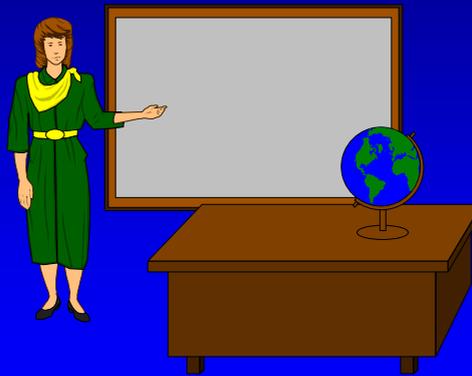
Application of Basic Science Information

- Muscle hypertrophy increases the amount of connective tissue
 - Improves passive stability
- Basic kinesiological information
 - maximal lumbar flexion
 - number of degrees of spinal movement between each vertebral segment in each plane.

Clinical Science in 2006

- In better position to develop, organize, and use our clinical science
- Larger number of PhDs in sciences
 - their research is important
 - **but so is their ability to specify direct applications of science to clinical practice**
 - help distinguish between scientifically valid explanations and pseudoscientific explanations

Physical Therapy Academia



Academia - Move Precisely

- PT educational programs to be true academic unit,
 - produce the highest level professional practitioner, and
 - make substantial contributions to the body of knowledge of the profession.
- Graduates should be skilled in
 - performing a standardized basic exam,
 - making accurate diagnoses for **basic conditions**,
 - designing appropriate management programs
 - implementing basic treatment programs

Academia - Move Precisely

- Students to attain a relatively high level of skill in developing treatment programs while they are in the academic environment
- no longer possible for the clinical environment to provide instruction for those with low level skills

Academia - Move Precisely

- Professional clinical doctorate programs to produce clinicians skilled in
 - rendering diagnoses and prognoses
 - selecting and implementing optimal management strategies
 - **justifying their decisions and actions using evidence from the literature**
 - communicating with professional colleagues in manner that conveys **expertise in the movement system**

Academia - Move Precisely

- Post-professional clinical doctorate programs to be developed to produce scholar-clinicians who will
 - contribute to our professional body of knowledge,
 - by integrating information obtained through critical analysis of the literature,
 - applying the information in clinical practice,
 - disseminating the information in the form of case reports.

We must not Take the Path of Least Resistance

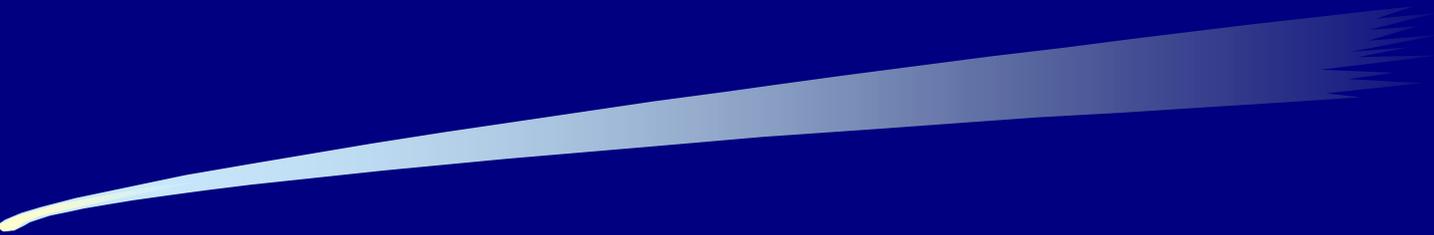
- Continue the proliferation of programs that lack the resources to provide
 - a strong education in clinical science,
 - a highly skilled practitioner, or
 - to contribute to the body of professional knowledge
- Introduce students to clinical tests and skills, with the expectation that basic proficiency will be acquired during clinical education.

We must not Take the Path of Least Resistance

- Introduce students to a wide variety of treatment techniques with the expectation that they will select and apply these techniques at their own discretion.
- Continue to tell students that they should be diagnosticians and then only teach them **about** the decision-making process without requiring them to make diagnoses of various types multiple times

We must not Take the Path of Least Resistance

- Devote time in the professional curriculum to student research that detracts from the time available for students to become skilled in examination, diagnosis, treatment planning, and treatment.



Clinical Innovators

- Berta Bobath
- Maggie Knott
- Florence Kendall
- Margaret Rood
- Signe Brunnstrom
- Maitland
- Kaltenborn
- McKenzie

Typical faculty member in 1950's to 1960's

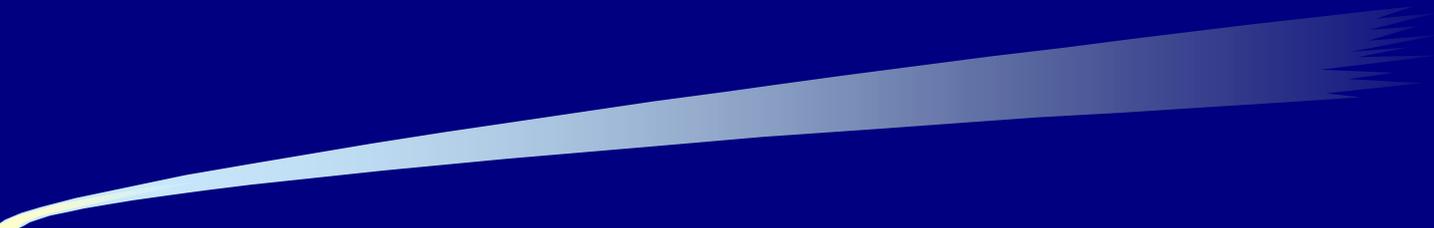
- Not a master clinician
- Not respected for clinical skills
- “Those who can practice do, those who cannot, teach.
- Heavy teaching load, prohibited practice
- Were not expected to do research

1980's Change in Educational Program Model

- Adopting standards of academic units in other clinical disciplines
 - requiring faculty research, practice, and teaching
- Reaching a critical mass
- Best and brightest joining faculties
- Becoming source of clinical innovation and research needed to advance clinical science of PT

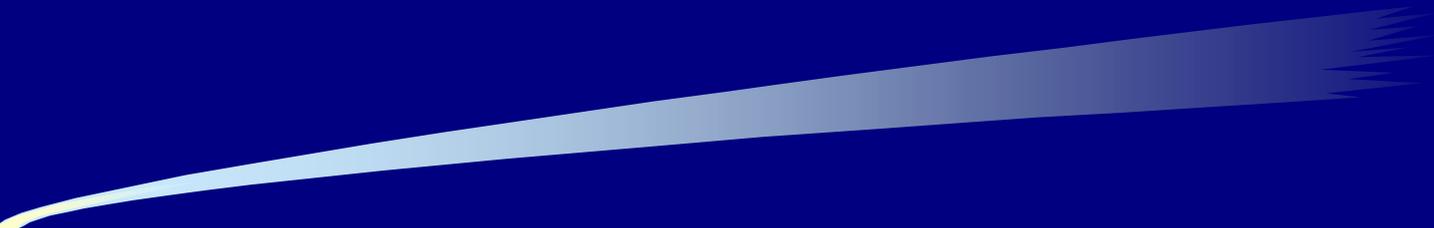
Implications of New Model for Entry-level Student and Clinician

- Students taught by physical therapist scientists
- Students taught by specialized master clinicians
- Student base of knowledge and fundamental skills can exceed the average clinician because of the level of material provided by faculty experts.
- Similar to medical students receiving their education by leading scientists and practitioners.



Today's Clinical Environment

- Rapid pace forcing therapists to model less than optimal practice patterns.
- Students follow the example of clinicians
- Academic programs should not expect clinical faculty to provide the direction for the student to establish his practice patterns.



Importance of Clinical Experience

- Opportunity to participate in intensive patient care
- Setting in which to evaluate clinical performance
- Exposure to a variety of clinical skills
- Guidance by experienced clinicians

The Trend of Physical Therapy Programs and the Academic Model

- Fewer programs following this model
- Proliferation of programs without resources of
 - highly prepared faculty with skills in
 - research
 - teaching, or
 - practice that is
 - required to prepare students for the scope of today's practice

Student Preparation Before Leaving Academia

- Able to demonstrate that he can perform an exam,
- Make a diagnosis
- Develop a treatment program,
- Implement that program
- Within time constraints that are similar to those imposed in the majority of clinical facilities

Faculty Responsibilities

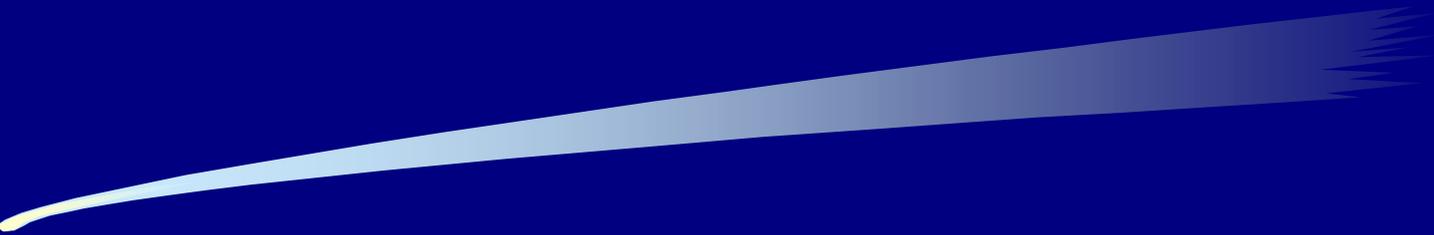
- Design a curriculum that provides concentrated
- Practice in a standardized examination,
- Practice in designing an appropriate exercise program,
- Practice in implementing the program, with
- Criticism from experienced faculty clinicians.
- Forego introduction to a wide variety of techniques

Diagnostic Categories to Direct Physical Therapy Treatment

- Provide precise focus for education
- Provide precise focus for practice
- Medical diagnoses direct physician's pharmacological or surgical intervention, do not direct PT treatment of movement system impairments.

Movement System Diagnoses

- Diagnoses for PT should be of
 - Syndromes of Movement System Impairments
 - Subdivisions of
 - Musculoskeletal
 - Neuromuscular
 - Cardiopulmonary
 - Integumentary
 - Tissue impairments
 - Movement impairments



Student Research

- Detracts from time student has to learn the profession of PT.
- Research is a profession
- Cannot learn two professions in two to three years
- Students can do research as independent studies, not as part of curriculum

Professional Clinical Doctorate

- Training in content upon which the decisions are to be made
- Education should provide information
 - about which decisions are to be made
 - upon which to base decisions,
- Lots of practice in making decisions.

Professional Clinical Doctorate

- Product consistent with product of other clinical doctorate programs
- acquire expertise in an anatomical or physiological system (movement system)
- expertise in the normal and abnormal structure and function of the system
- diagnose abnormal conditions, establish prognosis
- select most appropriate treatment option

Post Professional Clinical Doctorate

- Programs to produce scholar-clinicians and diagnosticians
- Updates in basic science, medical science, clinical science.
- Course work in critical analysis of literature
- Prepare case studies - contribute to body of knowledge
- Different degree title - not DPT

Physical Therapy Practice

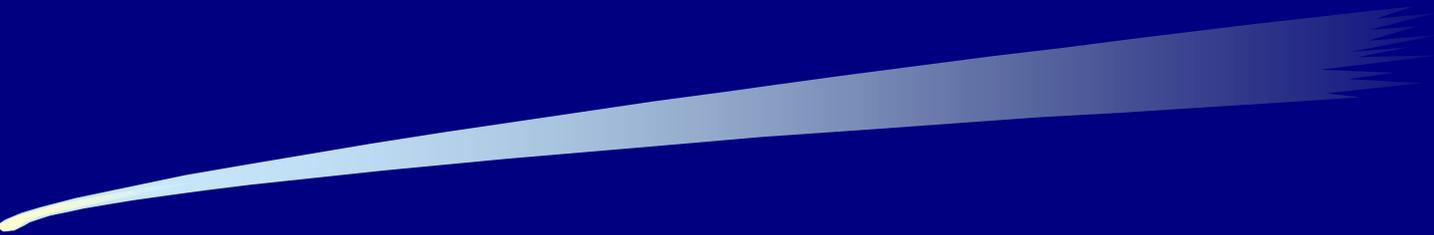


Highly Individualized Patient Management

- Trend that developed in 1960's and 1970's with patients with central nervous system dysfunction
- Still lack standardized approaches in examination and treatment
- Patient's unique problems addressed after an exam and determination of a diagnosis
- Modify treatment according to patient's special needs

Diagnosis First and Treatment Second

- Other practitioners and the public should seek consultation for
 - DIAGNOSIS FIRST
 - Treatment second
- Billing code for PT evaluation initiated in
 - 1998
 - Evaluation performed by MD



Practice - Move Precisely

- Promote the development and use of diagnostic categories that direct physical therapy
- Develop and utilize standard examinations and terminology
- Emphasize treatment that is based on a thorough knowledge of basic anatomy and kinesiology

Practice - Move Precisely

- Pursue knowledge of underlying science with as much commitment as we pursue the latest treatment methods
- Recognize our responsibility to protect patients from treatment fads that have highly questionable scientific bases
- Maintain adequate standards of practice, demanding adequate time for exam, diagnosis, treatment

We must not Take the Path of Least Resistance

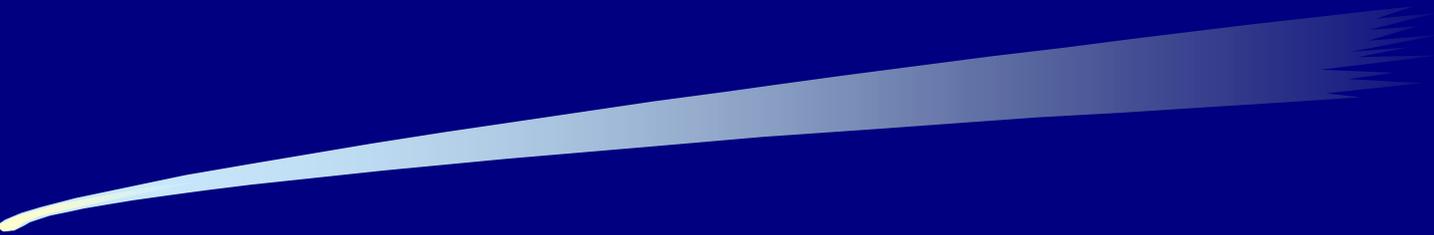
- Using approaches to examination and treatment that are highly eclectic and not based on standards consistent throughout the profession.
- Pursuing fads without pursuing a clear understanding of the relevant scientifically based explanation for the methods

We must not Take the Path of Least Resistance

- Communicating in a manner that typifies non-profession personnel
- Compromising professional standards of care by providing only partial treatment in order to meet unreasonable demands for productivity

Diagnosis to Direct Physical Therapy is Important





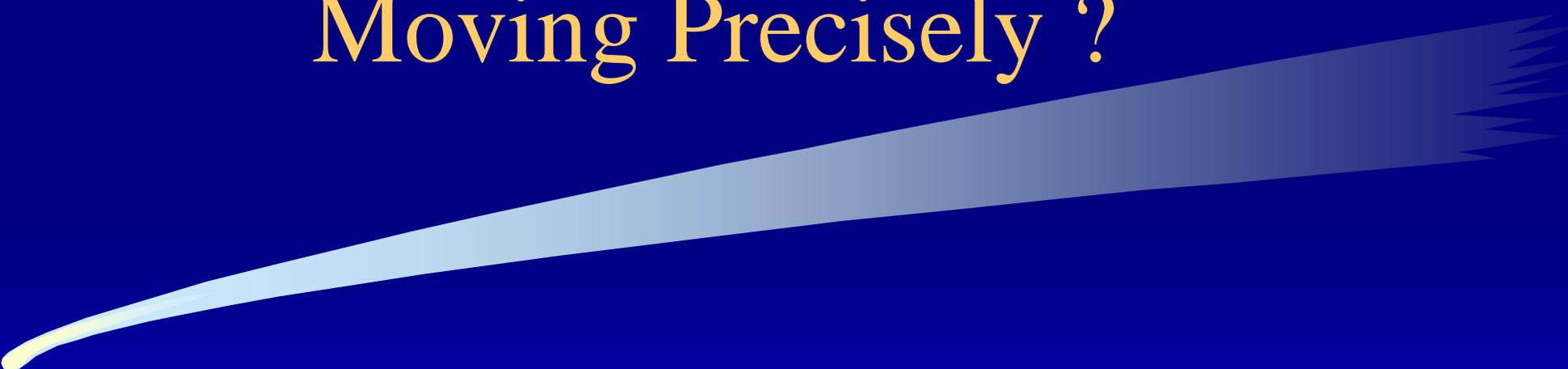
A Foundation of the Basics

- Strong knowledge of anatomy and kinesiology
- Skill in muscle length and strength testing
- Skill in movement analysis

Best Available Evidence

- Low back pain when lumbar spine is extended
 - Contract abdominals to posteriorly tilt pelvis
 - Not leap of logic to use such a treatment strategy
- Yet some more readily believe the
 - two halves of the pelvis can be adjusted relative to each other
 - than abdominals tilt pelvis, or
 - That the transversus muscle tilts the pelvis

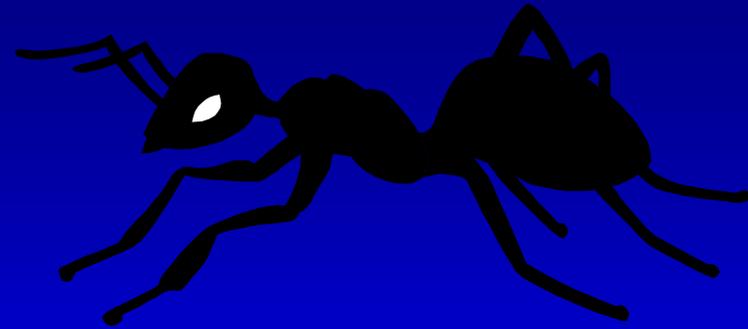
Moving Precisely ?



Taking the Path of Least
Resistance?

Documentation of Exercise Programs

- Dying bug
- The clam
- The chicken wing
- Hip hinging
- The skater's exercise



Accomplishments of Physical Therapists

- Use wide variety of interventions
- Treat extensive number of conditions
- High degree of responsibility
- High level of expertise
- Must find the time to use what we have accomplished
- Cannot practice like technicians because of lack of time

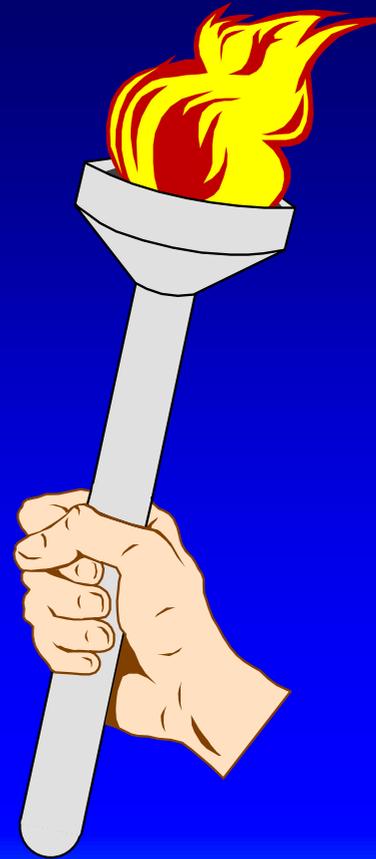
Balance in Physical Therapy Practice

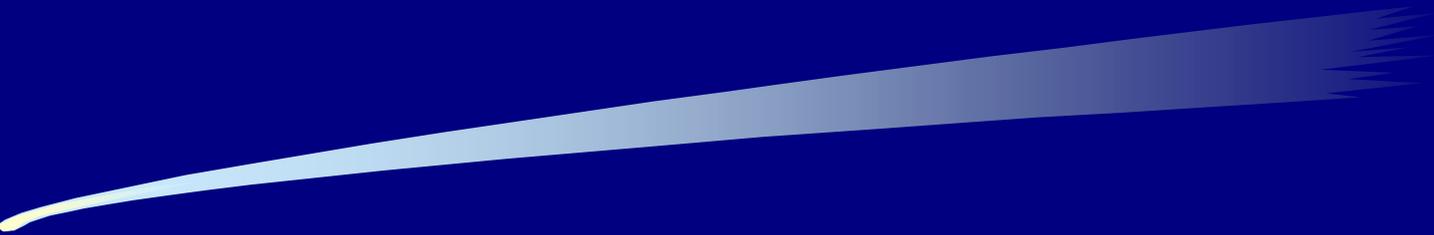
- Cost effectiveness
- Efficiency
 - with
- Adequate time for examination, diagnosis, and treatment



You of this generation

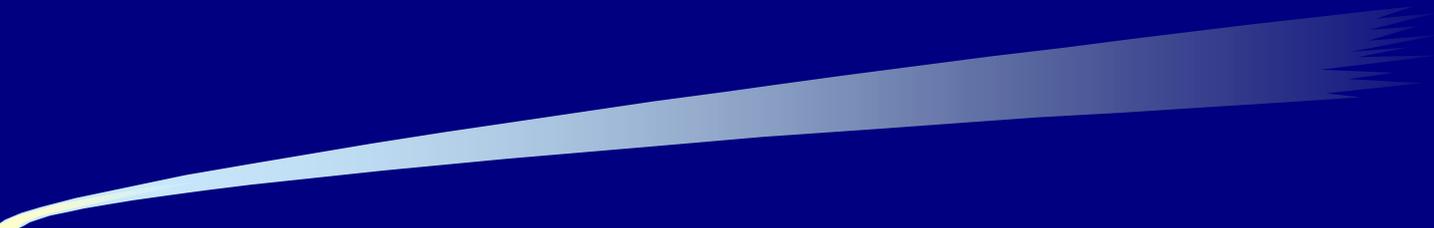
- Will carry the torch through the night of the next few years
- To provide a bright world for physical therapy in this century





Your Role

- Move Precisely
 - Use and expand our scientific foundation
 - Do not be misled by fads that lack substance
 - Do not be weakened by unreasonable demands
 - that compromise your responsibilities
 - to your patients and to your profession.



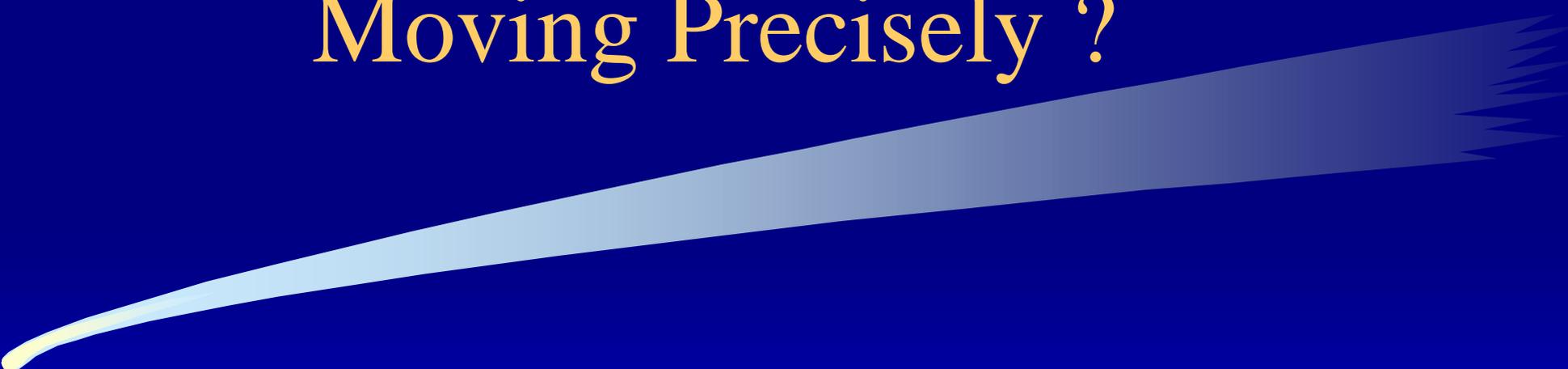
Do Not Take Path Of Least Resistance

- Failing to practice
 - and to communicate in a manner
 - that reflects the science & ethics of the profession

The World Needs Our Professional Services

- Much to give
- To aide the physically challenged
- To guide the physically able
 - Young or Old
- Society needs us so they can follow the path
- Of moving precisely toward
- Optimum health

Moving Precisely ?



Taking the Path of Least
Resistance?