

Kinesiology versus Biomechanics

A Perspective

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What is the difference between kinesiology and biomechanics? Are they one and the same or do they embody different fields of knowledge? An analysis of the component parts of the words reveals kinesiology to mean literally the study of motion and biomechanics to mean the study of the mechanics of life. Kinesiology is, therefore, inclusive of the biomechanics of motion and the neural and cardiovascular elements of movement. The broader scope of kinesiology is demonstrated by the Kinesiology Department at the University of California, Los Angeles, which has several specific tracks for advanced study including biomechanics, motor control, neural science, and exercise physiology. Biomechanics includes the statics and dynamics of musculoskeletal function, the mechanics of blood flow, cardiovascular and renal function, and the mechanics related to any bodily function.

What do these two words mean to the physical therapist clinician? Therapists have long accepted kinesiology as a part of their professional knowledge base, whether defined more narrowly as the study of muscular movement or in the broader form presented in the previous paragraph. Some therapists, using the broad definition, define pathokinesiology therapy

as the science of physical therapy.¹ Biomechanics, however, seems to bring on either a cold chill of fear or merely a feeling of indifference to many clinicians. Thoughts of biomechanics conjure up mathematical models and lengthy calculations that seem far removed from application to clinical reality. Radin reported a similar dislike for biomechanics among orthopedists: "If they wanted to be engineers they would have gone to engineering school."² Yet an understanding of the mechanics of movement is fundamental to the responsible practice of both fields. Biomechanics for clinicians must be applied to their working conditions with their patients. Mathematics is a necessary part of biomechanics, but the instructor who wishes clinicians to apply biomechanics may need to interpret calculations and make application of them to clinical practice. Biomechanics need not and should not be feared by clinicians. Nor should clinicians be comfortable with indifference to this science that is so critical to understanding movement. Those with advanced training in mechanics must carry the burden of simplifying and applying biomechanical concepts to everyday physical therapy practice.

REFERENCES

1. Hislop HJ: Tenth Mary McMillan lecture: The not-so-impossible dream. *Phys Ther* 55:1069-1080, 1975
2. Radin EL: Relevant biomechanics in the treatment of musculoskeletal injuries and disorders. Editorial comment. *Clin Orthop* 146:2-3, 1980

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