The Research Pyramid
Establishing the value of evidence from multiple research approaches in a systematic review

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Purpose
Health professions today are called upon to justify their treatment decisions with empirical evidence. The process of physical therapy intervention can be complex, and outcomes may depend on the particular characteristics of provider, setting, and patient. For this reason the evidence base for physical therapy interventions will be stronger if built from a wide range of knowledge sources.

Systematic reviews of evidence should value the findings of different research approaches. Thus a model was developed to guide the accomplishment of reviews, including experimental and observational as well as quantitative and qualitative research, on a clinical topic. The combination should yield a superior portrayal of evidence by providing information about both efficacy and effectiveness.

Relevance
The physical therapy reasoning process is based more on clinical findings than diagnosis. Interventions may have a complex scope, and their outcomes may focus on an individual's participation.

Extracting evidence from different research approaches should promote a better consolidation of the physical therapy knowledge base and facilitate the transfer of findings into everyday practice.

Description
The research pyramid was developed from traditional evidence hierarchies. Each of its four sides represent one research approach (Figure 1). Designs of studies on each side reflect a hierarchy of greater rigor and trustworthiness of findings (internal validity).

The common apex represents an overall synthesis of evidence from all four approaches. Just below the apex are meta-analytic (MA) or meta-synthetic (MS) studies of comparable research papers. The third level of evidence for experimental research remains the RCT. Quasi-experimental studies (QES) form the third level on the observational side (Figure 2).

Figure 1

Figure 2

Implications
Physical therapists should seek research evidence from all four approaches. Intervention guidelines based on reviews incorporating all four approaches should be more complete and may be more helpful for practitioners.

Pilot Test
In a pilot test, a scheme for combining quantitative experimental and observational approaches in a systematic review was operationalized and applied. The effect of physical therapy interventions on return to work for people with low back pain was examined.

Combined results gave a more nuanced portrayal of the state of the research evidence for intervention effectiveness and efficacy. Summarizing the findings of observational and experimental studies highlighted different effect sizes and directions compared to the sole interpretation (of the results) of experimental studies.

Figure 1

Figure 2

Conclusion
Operationalizing and using the model to summarize all four research approaches in one review could meet the requirements for an evidence-based physical therapy in a more comprehensive way. Future work should complete the operationalization of the scheme by including qualitative research and should evaluate empirically the benefits of applying the model.

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