
CLINICAL COMMENTARY AND REVIEW OF THE LITERATURE CURRENT CONCEPTS ON THE GENETIC FACTORS IN ROTATOR CUFF PATHOLOGY AND FUTURE IMPLICATIONS FOR SPORTS PHYSICAL THERAPISTS

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ABSTRACT

Context: Recent advances within the field of genetics are currently changing many of the methodologies in which medicine is practiced. These advances are also beginning to influence the manner in which physical therapy services are rendered. Rotator cuff pathology is one of the most common diagnoses treated by the sports physical therapist. The purpose of this commentary is to educate sports physical therapists on the recent advances regarding how genetics influences rotator cuff pathology, including rotator cuff tears, and provide a perspective on how this information will likely influence post-operative shoulder rehabilitation in the near future.

Evidence Acquisition: A comprehensive review of the literature was completed using the Medline database along with individual searches of relevant physical therapy, surgical, cell biology, and sports medicine journals. Search terms included: shoulder, rotator cuff pathology, genetics, apoptosis, and physical therapy. Search results were compiled and evaluated; relevant primary studies and review articles were gathered; the results from this comprehensive review are summarized here.

Study Design: Clinical Commentary, Review of the Literature

Results: Recent advances within the understanding of rotator cuff pathology have further elucidated the cellular and molecular mechanisms associated with rotator cuff tears. There appears to be a hypoxic-induced apoptotic cellular pathway that contributes to rotator cuff tears. Activation of specific proteins termed matrix metalloproteinases appear to be involved in not only primary rotator cuff tears, but also may influence the re-tear rate after surgical intervention. Further advancements in the understanding of the cellular mechanisms contributing to rotator cuff tears and postoperative techniques to help prevent re-tears, may soon influence the methodology in which physical therapy services are provided to patients sustaining a rotator cuff injury.

Conclusions: At this time continued research is required to more fully develop a comprehensive understanding of the role of genetic variables both within primary rotator cuff tears and their influences on post-operative rehabilitation from rotator cuff repair surgery.

Level of Evidence: Level 5

Key words: Apoptosis, matrix metalloproteinases, post-operative rehabilitation, shoulder

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