Epigenetics and Physical Therapy: Applying the Mechanisms of Epigenetics to Practice as Preventative Health Measures

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Introduction

The bridge between epigenetics and health care is beginning to emerge as an important union of social science, biology, and medicine. Epigenetics is a growing field of genetics that focuses on how lifestyle factors actively affect the expression of genes. Factors such as diet, exercise level, place of living, social structure, and more can play a role in the longevity and quality of a person's life. Healthcare professionals can educate patients on this new field of science to improve patient quality of life.

Purpose

The aim of this review is two-fold: first, to identify peer-reviewed articles related to the application of epigenetics in exercise and physical therapy. Secondly, this study will contribute to the body of research related to epigenetics and healthcare by providing current relevant knowledge as it relates specifically to exercise and physical therapy.

Methodological Approach

A literature review focused on the topics of epigenetics, exercise, and physical therapy was completed with sources from the following databases: American College of Sports Medicine, CINHAL, Pubmed, National Library of Medicine, and ScienceDirect. The search included these keywords; epigenetics, exercise, genetics, physical therapy, and rehabilitation.

Results

Utilizing the described search methods, the findings included thirty-four peer-reviewed studies; sixteen systematic reviews and eighteen experimental/research studies. Analysis of the findings related to exercise and epigenetics and applications of epigenetics to the field of physical therapy will be reported.

Discussion and Clinical Implications

According to research, exercising and living a healthy lifestyle can alter epigenetic age by influencing gene methylation. This could have a potential impact on future generations by passing genetic information down to descendants. This is tangible evidence of the "nurture" component in nature versus nurture. As direct-access clinicians, physical therapists have the incredible opportunity to play a large role in the health and lifestyles of patients. Knowing that generational disease risk can be reversed would significantly change how most people view health.

No funding sources were utilized. **Key Words:** epigenetics, exercise, genetics, physical therapy, and rehabilitation.