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Effect of Proprioceptive Neuromuscular Facilitation Stretching on Hamstring Flexibility: A Literature Review

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ABSTRACT

The hamstrings muscle which are found at the rear of the thighs, are essential for sprinting, jumping, and walking. Tightness in these muscles can cause compensatory movement patterns, change biomechanics, and limit Range of Motion (ROM), which may lead to lower back discomfort and other musculoskeletal problems. There are several types of stretching that may be applied in order to enhance muscle flexibility either acutely or chronically. Proprioceptive Neuromuscular Facilitation (PNF) is believed to improve flexibility through neural mechanisms such as autogenic inhibition, where the contraction of the target muscle triggers a relaxation response, and reciprocal inhibition, where contracting the opposing muscle group promotes relaxation of the target muscle. This review aimed to collect existing literature on the effects of PNF stretching on hamstring flexibility. The electronic searches were conducted using studies published in various databases, including PubMed, Scopus, Google Scholar, and PEDro covering the period from 2015 to 2025. This literature review provided insights into the effectiveness of PNF techniques for enhancing hamstring flexibility in adults.After identifying 28 papers, reviewing their titles, and removing those that were irrelevant, seven research were selected to meet the review's inclusion criteria.The findings indicated that a PNF protocol can lead to a 20–30% increase in ROM compared to baseline measurements following a six-week intervention. Additionally, immediate improvements of 10–15% in ROM were noted after just one session of PNF stretching. Overall, PNF stretching was found to be more effective than static stretching and IASTM for enhancing hamstring flexibility, making it a valuable approach for clinicians and rehabilitation practitioners.

Keywords: Hamstring muscle, Range of motion, Tightness.