

## **The Effect of Therapeutic Exercise on Long-Standing Adductor-Related Groin Pain in Athletes: Modified Hölmich Protocol**

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**Background:** The Holmich protocol in therapeutic exercise is the most appropriate method for the treatment of long-standing adductor-related groin pain (LSAGP). Herein, we evaluated a modified Holmich protocol to resolve the possible limitations intrinsic to the Holmich protocol in terms of the rate of return to sport and the recovery period for athletes with LSAGP. Design. The study followed a single-blind, before/after study design, where 15 athletes with LSAGP (mean age = 26.13 years; SD = 4.48) performed a 10-week modified Holmich therapeutic exercise protocol. Results. Outcome scores related to pain, hip adductor and abductor muscle strengths, and the ratio of maximum isometric and eccentric hip adduction to abduction strength increased significantly. Likewise, hip abduction and internal rotation ROM improved significantly compared to that at baseline.

**Methods:** Athletes were called via declaration in sport clubs. Sport physiotherapists and physicians were also asked to refer athletes with LSAGP to the physiotherapy clinic. After interviewing and examining 27 athletes, 18 of them, who each signed an informed consent form, were included in the study. The Ethics Committee of Tehran University of Medical Sciences approved the study.

**Results:** Eighteen athletes were initially included in the study, with 15 completing the treatment protocol. One athlete dropped out due to educational problems, one athlete withdrew because he had to go to military service, and one athlete was lost to follow-up. We have prepared basic characteristics of the study participants in Table 3. Weekly follow-ups and a final follow-up at 20 weeks after the start of treatment showed that 13 athletes (86.6%) returned to full sports activity without groin symptoms in a mean time span of 12.06 weeks (SD = 3.41).

**Conclusion:** Although the current study was a small trial ( $n = 15$ ) without controls, compared to the study by Hölmich et al. [5] ( $n = 29$  in active training group), the findings of this single-blind, before and after clinical trial objectively show that therapeutic exercise based on our modified protocol may be safer and may also be more effective than the Hölmich et al. therapeutic exercise protocol for LSAGP in athletes. The outcome measures related to the ratio of eccentric adductor to abductor strength show that strengthening exercises should not be stopped after the treatment period.

### **Biography**

Abbas Yousefzadeh is a distinguished professional in physiotherapy and rehabilitation, currently affiliated with Tehran University of Medical Sciences, Iran. With a strong academic background and a commitment to healthcare advancement, Abbas is a leading figure in physiotherapy research and clinical practice.