

THE ROLE OF ACTIVE TRAINING PROGRAMME AND PASSIVE PHYSIOTHERAPY TREATMENT IN ATHLETES WITH GROIN PAIN: LITERATURE REVIEW

■ Collebrusco Luca¹, Marcelli Giacomo²

¹ Rehabilitation Unit, National Health Service of the Umbria Region, Perugia, Italy

² Postgraduate Physioterapist, Umbria Region, Perugia, Italy

■ **KEYWORDS:** Groin Pain, Exercise, Physical Therapy, Physiotherapy

ABSTRACT

Background: Groin pain is a very common issue in professional and non-professional athletes. The complexity of the rehabilitation approach is due to the number of anatomical structures that can be involved, and the multifactorial cause of GrP. *Objective:* To verify, through a narrative review of the literature, the role of the Active Training programme (AT) and Multi Modal Treatment program (MMT) in the conservative treatment of GrP. *Materials and Methods:* The research was carried out by a single operator through a review of the literature of the last 25 years in databases such as Medline, Pubmed and PEDro. Only RCTs with a minimum score of 5/10 in the PEDro Scale were included. The research started in March 2021 and ended in May 2021. *Results:* 75 scientific articles were obtained from an initial research. After removing duplicates and reading title and abstracts, 4 studies were selected and reviewed. The first study aims to test the effectiveness of TA compared to passive treatment. In the second and third AT is compared with MTM. The fourth study looked at the long-term effectiveness of TA. *Conclusion:* According to

INTRODUCTION

The groin pain (GrP) is not fully understood and there are several controversial opinion on both diagnosis and treatment^{1,2,3,4}. The term GrP refers to the description of a symptomatology, related to the pubic area, from different causes: musculoskeletal, neurological and visceral⁴. GrP is a widespread problem among amateur and professional athletes, and it accounts around 5-10% of injuries in clinical practice. This kind of injury can lead to a significant stop from the practiced sport, or even end the athlete's career, due to its clinical complexity, the high number of anatomic structures involved, and the consequent difficulties during the rehabilitation treatment. In fact the multifactorial pathogenesis of the GrP, with possibly related diseases, represents a big diagnostic challenge. In addition the anatomic complexity of the pubic area makes harder the job of adopting an accurate terminology in the contemporary literature. One of the most rational GrP classifications is proposed by Weir A. et al. (2018)⁵. The main mechanisms related to the onset of GrP have been listed by Serner A. et al. (2018)², dividing them into open and closed kinetic chain mechanisms. Waldén M. et. al (2015)⁶, found a higher incidence rate of 12.8% in males, compared to the 6.9% of the females. Engebretsen A. H. et al. (2010)⁷, describe the presence of certain risk conditions that increase the probability of GrP such as muscle weakness, reduced external hip rotation, intensity of exercise etc. Adductor-related groin pain accounts for 58% of injuries in all sports and 69% of injuries to the groin in footballers according to Hölmich P. et al, (2007)⁸. The aim of this study was to verify, through

a narrative review of the literature, the role of the Active Training programme (AT) and Multi Modal Treatment program (MMT) in the conservative treatment of GrP.

MATERIALS AND METHODS

The research was carried out by a single operator through a review of the literature of the last 25 years in the electronic databases such as Medline, Pubmed and Pedro, with the following search keys: "groin pain", "exercise", "physical therapy", "physiotherapy". *Inclusion criteria:* only RCTs of professional and non-professional athletes, with a PEDro Scale score of 5/10 or more. *Exclusion criteria:* wrong study design, abstract not available, full-text not available, articles not relevant to the survey, articles written in a language other than English. The research started at the beginning of March 2021 and ended in May 2021.

RESULTS

From an initial research, 75 scientific articles were obtained. Through the reading of the title, the 42 duplicates were identified. The remaining 33 articles were reviewed by reading the title and abstracts to assess their relevance to the search criteria. The chosen articles are 4, where the full test was read as in flow-chart shown in Figure 1 to construct the main bibliography of the narrative review summarized in Table n. 1. In the studies: Hölmich et al. (1999)⁹ verify how an AT program is aimed at improving strength and coordination of the muscles acting on the pelvis, particularly the adductor muscles, proving to be very effective in treating athletes with GrP. Hölmich P. et

STUDY	GOALS	METHODS	RESULTS
Holmich P. et al. 1999	Check the effectiveness of active physical training compared to passive physiotherapy treatment.	Group AT = Active treatment, 34 athletes. Exercise program carried out in group 3 times a week. PT = Passive treatment group, 34 athletes. Physical therapy, manual therapy, stretching.	In the AT group, in 25/34 athletes the result was excellent or good, against the 10/34 of the PT group. 79% of the AT group returned to sport at the previous level, compared with 14% of the PT group.
Holmich P. et al. 2011	Check the long-term effectiveness of the programme proposed in 1999.	Follow-up of 8-12 years of 47/59 athletes participating in the study of 1999.	The result was excellent in 50% of the AT group and 22% of the PT group.
Weir A. et al. 2011	Compare the effectiveness of multi-modal treatment with the programme proposed by Holmich in 1999.	Group ET = exercise therapy, 25 athletes. Exercise program proposed by Holmich in '99 to be carried out at home. Group MMT = multi-modal treatment, 29 athletes. Heat therapy, Van Den Akker manual therapy, stretching. Both protocols are followed by a back-to-run program.	In the MMT group, 50% of athletes returned to their previous levels with a faster time frame (12.8 weeks) than in the ET group (55% of athletes; 17.3 weeks).
Schöberl M. et al. 2017	Compare the differences in efficacy between treatment with exercise, treatment with exercise and no treatment.	Group 1 = Exercise programme + shock waves; 26 athletes. Group 2 = Exercise programme (as group 1) without shock waves; 18 athletes. Group 3 = control group, no treatment; 51 athletes.	In Group 1 the mean time to return to sport was 73.2 days, compared to 102.6 days in Group 2. In the control group, however, the average time was 240 days. In addition, 26 out of 51 athletes in the control group experienced relapses, while none of the study groups experienced relapses.

Tab. 1 – Included articles

List of abbreviations: Active Treatment (AT), Passive Treatment (PT), Exercise Therapy (ET), Multi Modal Treatment (MT).

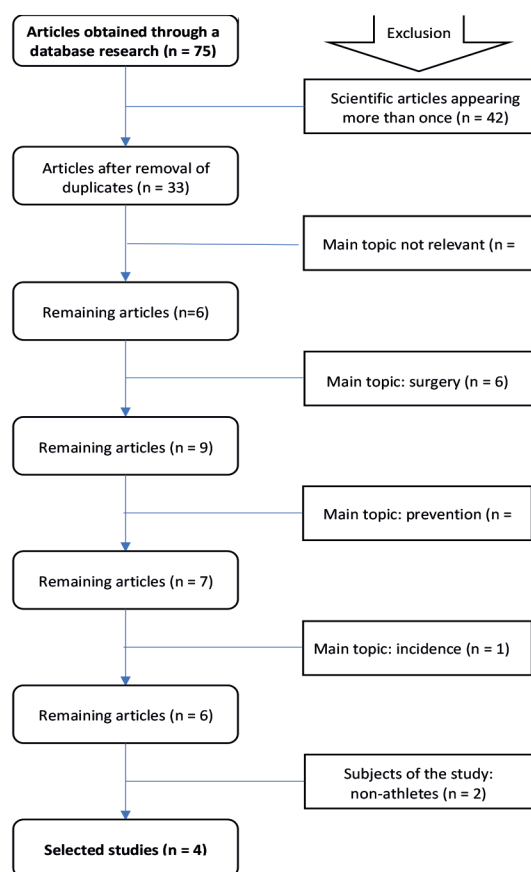


Fig. 1 - Flow Chart of bibliographic research

al. (2011)¹⁰ evaluate the long-term effects of the AT program proposed by Hölmich P. (1999)⁹, and for the first time was noticed that an AT treatment for GrP has a long-term effect (8-12 years), while Weir A. et al. (2011)³ verified that a MMT program is a safe and effective treatment like an AT program. Schöberl M. et al. (2017)¹¹ proved that a standardized MMT program has positive effects on pain reduction and possible relapses.

DISCUSSION

During the research process, interesting ideas on conservative treatment emerged. In fact there is moderate evidence regarding the efficacy of an AT treatment both in terms of painful symptoms, subjective feeling of the patient and reintegration into specific sport maintaining good results in the long term, compared to an MMT treatment which, however, has a greater effect on reducing viscoelastic muscular stiffness of adductors, reducing the insertion load. In addition, MMT makes use of physical therapy such as laser, Transcutaneous electrical nerve stimulation (TENS) and wave therapy representing a non-invasive focal treatment option to reduce inflammation and pain in the symphysis, evidenced a satisfactory return to sport, but which in the long term seems to be less effective. From the literature in our possession conservative treatment seems to have a good success in the treatment of GrP even better if carried out in an integrated way with more therapeutic methods such as AT and MMT, preceded by a timely and correct early diagnosis.

CONCLUSIONS

The treatment of GrP is multifactorial and therefore requires an appropriate management. According to the studies analysed, the integration of different conservative treatment approaches such as AT and MMT is the best option. Despite these considerations, it should be stressed that the study has some obvious limitations. First of all, the lack of a gold standard that allows to extrapolate a good degree of accuracy in the therapeutic management of conservative GrP, as well as the small number of available literature on this subject. This leads to caution in transferring the evidence reported to the rehabilitation clinic and further analysis of the effectiveness of a GrP treatment plan is desirable. Future research is essential to construct high quality studies to have a greater methodological

rigour in this field, thus laying the common ground for the construction of guidelines and good clinical care practices in line with what is the profession of physiotherapist, in light of the new regulations Law no. 24 of 8 March 2017(1) and to the establishment of the health professional associations with Law no. 3 of 11 January 2018(2)

Acknowledgements

The authors would like to thank to Dimitri Natoli for the translation of this paper.

Notes

- (1) Art.5, Legge n. 24/2017.
- (2) Capo II, Professioni Sanitarie, Legge n. 3/2018.

REFERENCES

1. Delahunt, E. *et al.* Minimum reporting standards for clinical research on groin pain in athletes. *Br. J. Sports Med.* **49**, 775–81 (2015).
2. Serner, A., Mosler, A. B., Tol, J. L., Bahr, R. & Weir, A. Mechanisms of acute adductor longus injuries in male football players: A systematic visual video analysis. *Br. J. Sports Med.* **53**, 158–164 (2019).
3. Weir, A. *et al.* Manual or exercise therapy for long-standing adductor-related groin pain: A randomised controlled clinical trial. *Man. Ther.* **16**, 148–154 (2011).
4. Bisciotti, G. N. *et al.* Groin pain syndrome Italian consensus conference on terminology, clinical evaluation and imaging assessment in groin pain in athlete. *BMJ Open Sport Exerc. Med.* **2**, (2016).
5. Weir A, Brukner P, Delahunt E, *et al.* Doha agreement meeting on terminology and definitions in groin pain in athletes. *Br J Sports Med.* **49**, 768-774 (2015).
6. Waldén, M., Häggglund, M. & Ekstrand, J. The epidemiology of groin injury in senior football: A systematic review of prospective studies. *Br. J. Sports Med.* **49**, 792–797 (2015).
7. Engebretsen, A. H., Myklebust, G., Holme, I., Engebretsen, L. & Bahr, R. Intrinsic risk factors for groin injuries among male soccer players: A prospective cohort study. *Am. J. Sports Med.* **38**, 2051–2057 (2010).
8. Hölmich, P. Long-standing groin pain in sportspeople falls into three primary patterns, a ‘clinical entity’ approach: A prospective study of 207 patients. *Br. J. Sports Med.* **41**, 247–252 (2007).
9. Hölmich, P. *et al.* Effectiveness of active physical training as treatment for long-standing adductor-related groin pain in athletes: Randomised trial. *Lancet.* **353**, 439–443 (1999).
10. Hölmich, P., Nyvold, P. & Larsen, K. Continued significant effect of physical training as treatment for overuse injury: 8- to 12-year outcome of a randomized clinical trial. *Am. J. Sports Med.* **39**, 2447–2451 (2011).
11. Schöberl, M. *et al.* Non-surgical treatment of pubic overload and groin pain in amateur football players: a prospective double-blinded randomised controlled study. *Knee Surgery, Sport. Traumatol. Arthrosc.* **25**, 1958–1966 (2017).
12. Weir, A. *et al.* A manual therapy technique for chronic adductor-related groin pain in athletes: A case series. *Scand. J. Med. Sci. Sport.* **19**, 616–620 (2009).

