

The Strigil: A Prototype of Instrument-Assisted Soft Tissue Mobilization for the Prevention and treatment of Soft Tissue Dysfunctions

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Abstract. *The strigil is an ancient tool used in our lands for cosmetic, hygienic, and medical purposes. It is usually made of metal and features a curved, flat blade, often used with oils to cleanse the skin. This article examines the strigils as a potential prototype for Instrument-assisted Soft Tissue Mobilization (IASTM). This therapeutic technique utilizes specialized tools to detect and treat soft tissue dysfunctions, including scar tissue and adhesions. IASTM aims to enhance mobility, alleviate pain, and stimulate the body's natural tissue repair processes. The medical database PubMed contains 135 studies related to IASTM. This article reviews the available research, which we have organized into the following areas: the efficacy of IASTM (a systematic review), its application in athletes, therapeutic effectiveness, and effects of Instrument-assisted Soft Tissue Mobilization on Musculoskeletal Properties.*

Keywords: strigils, IASTM, athletes

Ключови думи: стригила, IASTM, спортисти



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1. STIGILS AS MEDICAL INSTRUMENTS: EVIDENCE FROM PHYSICIAN GRAVES IN BULGARIAN LANDS

In Nadezhda Kirova's dissertation *Medicine in the Provinces of Lower Moesia and Thrace (1st century – end of the 3rd century)*, the strigil is included in the section *Medical and Pharmaceutical Instruments from the Provinces of Lower Moesia and Thrace*, subsection B. Specialized Instruments. Toward the end of this part, she discusses two tools whose primary function was not medical, but hygienic. Nevertheless, ancient authors such as Celsus, Galen, Marcellus, and Scribonius Largus describe their use in medical contexts.

The strigil, commonly used for scraping the body after physical activity, is one such instrument. From the 1st century BCE to the 1st century CE, it was also employed for administering ear medications – sometimes after heating the remedy directly in the strigil

itself. Though typically found in gymnasiums (*palestrae*), its association with medicine is evident, as Kirova points out that *'health and physical exercise were inseparably linked'* in antiquity. The act of scraping also served a massaging purpose, enhancing its therapeutic role.

Kirova further cites Pliny, who noted that the oil removed during cleansing was not thrown away but reused in the preparation of remedies for conditions such as rheumatism and neuralgia.

Strigils have been found more frequently in the graves of physicians in the Bulgarian territories, compared to the Western Provinces. This pattern highlights their medical significance, extending beyond their typical association with hygiene and athletic practices. This archaeological context draws attention to the strigil's role not only as a cleansing tool but also as a medical instrument embedded in therapeutic routines¹.

Further support for the interpretation of strigils as medical instruments in the funerary context of the Bulgarian lands comes from an early documented case presented by Georgi Katsarov. In one burial, cast-bronze strigils were discovered alongside a circular bronze box with a lid and four internal compartments, a cylindrical bronze container with a widened end, and a bronze spoon-like medical instrument. The combination of these objects strongly suggests that the deceased was likely associated with the medical profession (Katsarov 1935, 59-62 as cited in Andreeva 2018)².



Figure 1. Two strigils and a strigil holder 2nd – 3rd c. AD Bronze, МН Попово Inv. No. А-443/
Фигура 1. Две стригили и стригилодържател II – III в. Бронз. ИМ Попово, Инв. № А-443

2. SCIENTIFIC RESEARCH WITH IASTM

In the present article, the strigil is examined as a possible prototype for instrument-assisted soft tissue mobilization (IASTM). This is a therapeutic technique that utilizes specialized tools for the prevention and treatment of soft tissue dysfunctions, including scars or adhesions. The purpose of instrument-assisted soft tissue mobilization is to enhance range of motion, alleviate discomfort, and support the body's natural ability to repair soft tissue.



Figure 2. IASTM treatment³
Фигура 2. IASTM лечение³



Figure 3. Strigil⁴
Фигура 3. Стригила⁴

A total of 135 studies related to IASTM are available in the medical database. We classified them into the following three categories: 1) Literature reviews concerning the effectiveness of IASTM; 2) Application of IASTM in athletes, and 3) Therapeutic effectiveness and the effects of instrument-assisted soft tissue mobilization on musculoskeletal properties.

¹ Kirova 2010.

² Katsarov, as cited in Andreeva 2018.

³ www. <https://limitless-physical-therapy.com> 2025.

⁴ Andreeva 2018.

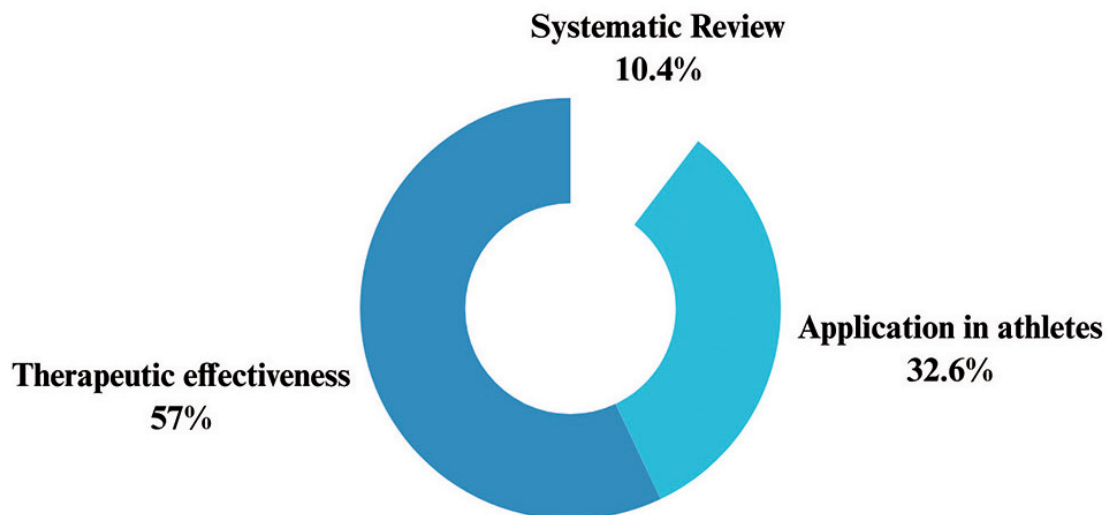


Figure 4. Research trends
Фигура 4. Научни тенденции

The analysis of 135 studies in PubMed reveals that Systematic reviews account for 14 studies, representing approximately 10.4% of the total; applications in athletes include 44 studies, making up about 32.6%; therapeutic effectiveness is the focus of 77 studies, which constitute the majority, or 57.3 % of all publications. This distribution, illustrated in Figure 4, demonstrates that most research emphasizes the therapeutic outcomes of IASTM, while a smaller portion addresses theoretical reviews and applications in athletic populations.

2.1 THERAPEUTIC EFFECTIVENESS

Based on the growing body of research, Instrument-Assisted Soft Tissue Mobilization (IASTM) demonstrates promising therapeutic effectiveness across a range of musculoskeletal and pain-related conditions. Studies report significant improvements in patients with soft tissue injuries, knee osteoarthritis, and adhesive capsulitis, as well as in those experiencing various forms of chronic and acute pain — including migraine, neck pain, patellofemoral pain syndrome, low back pain, and myofascial pain syndrome. Additionally, IASTM has shown efficacy in correcting postural issues, such as asymptomatic dynamic knee valgus, and

improving joint function and flexibility. These findings underscore the multifaceted clinical benefits of IASTM, which range from pain reduction and improved range of motion to enhanced soft tissue function and neural responsiveness — all of which support its growing integration into contemporary physiotherapy and rehabilitation protocols.

2.2 APPLICATIONS IN ATHLETES

Recent research has highlighted the increasing relevance of Instrument-Assisted Soft Tissue Mobilization (IASTM) as a valuable tool for enhancing athletic performance and musculoskeletal function. This technique has been shown to improve joint mobility, muscle flexibility, strength, and dynamic stability, while also reducing pain and soft tissue restrictions. Comparative studies with methods such as myofascial release, muscle energy techniques, and dry needling confirm the effectiveness of IASTM, both as a standalone approach and in combination with other modalities. Factors such as pressure application, instrument design, and technique consistency are emerging as key components of achieving optimized outcomes. Notably, contributions by Martonick et al. (2023)⁵, and Cheatham et al. (2021)⁶ underline the growing clinical interest in IASTM as a

⁵ Martonick et al. 2023: 001483.

⁶ Cheatham et al. 2021: 1100-1111.

means of boosting recovery, preventing injury, and supporting high-level athletic demands.

2.3 STEMATIC REVIEWS

Systematic reviews have confirmed the growing body of evidence supporting the therapeutic efficacy of instrument-assisted soft tissue mobilization (IASTM) in managing a broad spectrum of musculoskeletal conditions. Cheatham et al. (2016)⁷ provided early, comprehensive insights, highlighting the potential of IASTM to reduce pain and improve function, while calling for more robust studies. More recent analyses, such as those by Tang et al. (2025)⁸, offer meta-analytic data demonstrating moderate to strong effects of IASTM for both upper and lower extremity disorders, spinal dysfunctions, and soft tissue-related pain syndromes. These reviews support the clinical use of IASTM for improving range of motion, decreasing muscle stiffness, and enhancing functional performance. Complementary reviews, such as those by Dizon et al. (2023)⁹ and Fukushima et al. (2024)¹⁰, further contextualize IASTM within broader conservative management frameworks, underscoring its relevance in evidence-informed rehabilitation strategies.

3. ATHLETICS, HEALTH, AND CULTURAL IDENTITY IN ANCIENT THRACE: EVIDENCE FROM ARTEFACTS AND ARCHITECTURE

The gold signet ring from the Svetitsa mound near Shipka, dated to the end of the 5th century BC, provides essential material and symbolic evidence of the Thracian elite's views on the body, discipline, and social prestige.



Figure 5. Signet ring, 5th c. BC¹¹
 Фигура 5. Пръстен-печат, V в. пр. Хр.¹¹

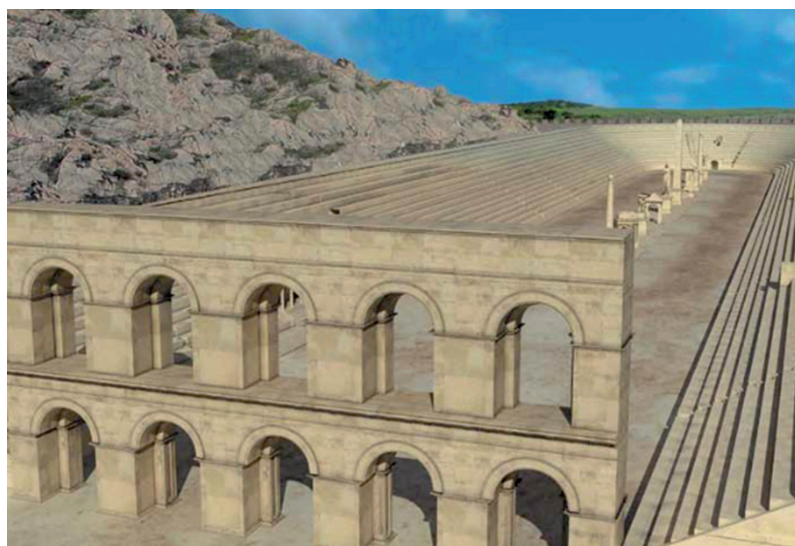


Figure 6. Ancient stadium in Plovdiv¹²
 Фигура 6. Античния стадион в Пловдив.¹²

⁷ Cheatham et al. 2016: 200-211.

⁸ Tang et al. 2025: 257.

⁹ Dizon et al. 2023: 53.

¹⁰ Fukushima et al. 2024: 74-88.

¹¹ Andreeva 2018.

¹² Andreeva 2018.

Found in a sarcophagus-like grave with a rich inventory, the ring likely contains stylized architectural elements reminiscent of the spatial organization of the ancient gymnasium. Although somewhat conventional, this can be interpreted as a cultural reference to an environment where bodily care and education were closely intertwined. The presence of such an artifact in a funerary context supports the hypothesis that concepts of physical health, status, and body cultivation were prevalent among the Thracian aristocracy, similar to those found in the Greco-Roman world.

In support of this interpretation, one can also consider the graphic reconstruction of the ancient stadium in Philippopolis (present-day Plovdiv), which demonstrates the scale and role of the athletic infrastructure in Thrace during the Roman period. Stadiums – like the one at Philippopolis – were likely used not only for competitions, but also for social events and rituals, reflecting the understanding that physical education was integral to cultural and civic belonging. The architectural scheme, inspired by Hellenistic models, illustrates the dissemination of gymnastic and therapeutic practices within a regional context. Such reconstructions allow us to analyze how sport and health functioned as related dimensions in the public and cultural space of Ancient Thrace.

Slava Vassileva, in her work *Sport as Represented in Artefacts from the Pre-Roman Thrace*, explores the gymnasium as a key public structure in ancient Greek cities, symbolizing civic pride and potential. At its centre was the *palaestra*, a rectangular open courtyard used for physical training, surrounded by porticoes, educational spaces, baths, and dressing rooms. Athletes, who trained and competed naked (*gymnoi*), applied oil to their bodies to retain energy and protect against wind. As Lucian explains, dust and sand adhered to the oil, forming a layer that was later removed with a **strigil** (στλεγγίς) – *an object consisting of a long-curved groove and a handle*. Vassileva notes that this tool became *one of the most common attributes in athletes' images*.¹³

¹³ Vassileva 2018: 37-41.

¹⁴ Dimitrova 2017: 406-410.

¹⁵ Angelcheva & Tomova 2023: 66-73.

¹⁶ Dimitrova & Nesheva 2003: 684-690.

4. PERSPECTIVES AND RECOMMENDATIONS

The continuity of healing and physical practices in Bulgaria, rooted in tradition and cultural heritage, offers a valuable foundation for the development of modern concepts related to sport, health, and wellness. As demonstrated in recent studies by Dimitrova (2017)¹⁴, Angelcheva and Tomova (2023)¹⁵, and Dimitrova and Nesheva (2003)¹⁶, the Bulgarian academic and professional landscape has increasingly adopted the integration of traditional therapeutic knowledge with innovative wellness approaches. This synthesis presents promising directions for future research, particularly in the field of instrument-assisted soft tissue mobilization (IASTM). This technique can be enriched by ancient precedents and adapted for diverse settings, including post-therapeutic protocols.

The restored research and rehabilitation facility in the Ovcha Kupel district of Sofia provides a unique infrastructural opportunity to advance such interdisciplinary investigations, linking ancient wisdom with modern science. As the Latin maxim reminds us, *Nihil novi sub sole*, and a phrase echoed in Ecclesiastes 1:9: *What has been will be again, what has been done will be done again; there is nothing new under the sun*. These words reflect the timeless relevance of healing through movement, touch, and ritual – reaffirmed today through science and practice.

CONCLUSION

Based on conducted scientific studies, the application of instrument-assisted soft tissue mobilization has proven its effectiveness and is increasingly becoming part of routine physiotherapy practice. It is primarily used for the treatment of musculoskeletal dysfunctions, as well as for injury prevention, recovery after intense physical activity in athletes, and enhancing physical performance.

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Стригилата:
Прототип на инструментално подпомагана
мобилизация на меките тъкани за превенция
и лечение на дисфункции на меките тъкани

Дияна Попова-Добрева

Стригилата е древен инструмент, използван по нашите земи за козметични, хигиенни и медицински цели. Обикновено изработена от метал, стригилата има извита, плоска форма и често се използва с масла за почистване на кожата.

Тази статия разглежда стригилата като възможен прототип за мобилизация на меки тъкани с помощта на инструменти (IASTM), терапевтична техника, която използва специализирани инструменти за превенция и лечение на дисфункции на меките тъкани, като белези или сраствания. Целта на IASTM е да подобри мобилността, да намали болката и да насърчи естествените процеси на възстановяване на тъканите на тялото.

В медицинската база данни PubMed са налични 135 изследвания, свързани с IASTM. Тази статия анализира наличните изследвания, които сме систематизирали в следните области: литературни прегледи свързани с ефикасността на IASTM, приложение на IASTM при атлети, терапевтична ефективност и ефекти от мобилизацията на меки тъкани с помощта на инструменти върху мускулно-скелетните свойства.



