Hamstring Syndrome

DEFINITION

The hamstring syndrome (HS) is a disease frequently found i
sports. It may causes long periods of interruption of training an
competitive activity.

DEFINITION

The Hamstring Syndrome (HS) IS an insertional tendinopathy of the proxim
hamstring, in which the formation of a fibrotic tissue also causes a compressi
of the adjacent sciatic nerve. Often this is a result of a previous injury to t
tendon component or one of its degeneration that results in an increase of t
caliber of the tendon itself. Initially sprinters seemed to be the category of spo
most at risk, but recent research has highlighted instead be a problem mo
common among middle-distance runners, football players and skiers.

BIOMECHANICS

During the racing action takes place alternating lengthening and shortening of the muscle, which enables an effective movement of technical movements in the economy. The hamstring muscles are working very intensively during the "pendulum" (alternation support – thrust recovery), characteristic of the cycle of the ride.

BIOMECHANICS

After the boost phase of the foot to the ground, the hamstring contract concentrically to implement the recovery of the limb swinging, extending the hip in aid to the gluteal muscles, stabilizing the knee joint, along with the quadriceps muscle, and absorbing and dissipating the vertical forces that develop in the support phase of the foot to the ground, which can be up to 4 - 5 times the body weight. The running speed, the inclination of the terrain, the overload body and other factors, are in close relationship with the magnitude of these stresses.

BIOMECHANICS

During the advancement of the knee, to avoid hyperextend the leg, th hamstring contract eccentrically, the muscle lengthens while developin tension. A fast forward leg, kicked forward, if it is not limited and slowed dow it may causes trauma. This is the action that is potentially more detrimental f hamstring during racing action, especially if the latter lack of elasticity.

Intrinsic causes

- the anatomical variability, resulting in more or less marked alteration of the normal biomechanics of the athletic action, which subjects the anatomical structures urged to abnormal stress;

- Metabolic diseases, which can promote local inflammatory reactions, as well as cause the alteration of the composition of normal muscle-tendon tissue to determine an earlier age;

- the individuals age, years of competitive activity and possible overweight.

Extrinsic Causes

Often become decisive in establishing the syndrome hamistring overuse.

- incongruous workout
- Inadequate competitive land or training
- unsuitable footwear

Predisposing factors

- alteration of the index of strength between quadriceps and hamstring
- biomechanical dysfunctions lower limbs and pelvis
- postural dysfunction and consequent muscle retraction
- little mobility of the lumbosacral and sacroiliac joint
- altered motor pattern race
- Heterometry lower limbs resulting in overuse of muscles and tendons, and articular capsule-ligament
- dysfunctions of the foot: pronation or supination; by affecting the function of the lower limb and then the cycle race, also affect performance.

The run action is "harmonic", when the hamstring is tonic, not retracted and with a good neuromuscular coordination during the "pendulum" of the race. The functional imbalance of the power ratio between the hamstring and quadriceps muscle can lead to a functional overload and then to a trauma. The index of power developed between quadriceps and hamstring is 6 to 4 (physiological relationship). When the quadriceps has a variety of causes excessive growth or the hamstring has a weakness-retraction (post-traumatic, etc. Caused by algodystrophy), the race will be a little harmonica and then you can develop a syndrome dell'hamstring.

Causes

- sharp and sudden increase in training load
- inadequate heating and cool-down muscle
- insufficient muscle elasticity
- training bumpy surfaces, hard etc.
- inappropriate footwear or worn
- Excessive intensity of the workouts with altered biomechanics of running
- premature return after injury, with insufficient period riatletizzazione

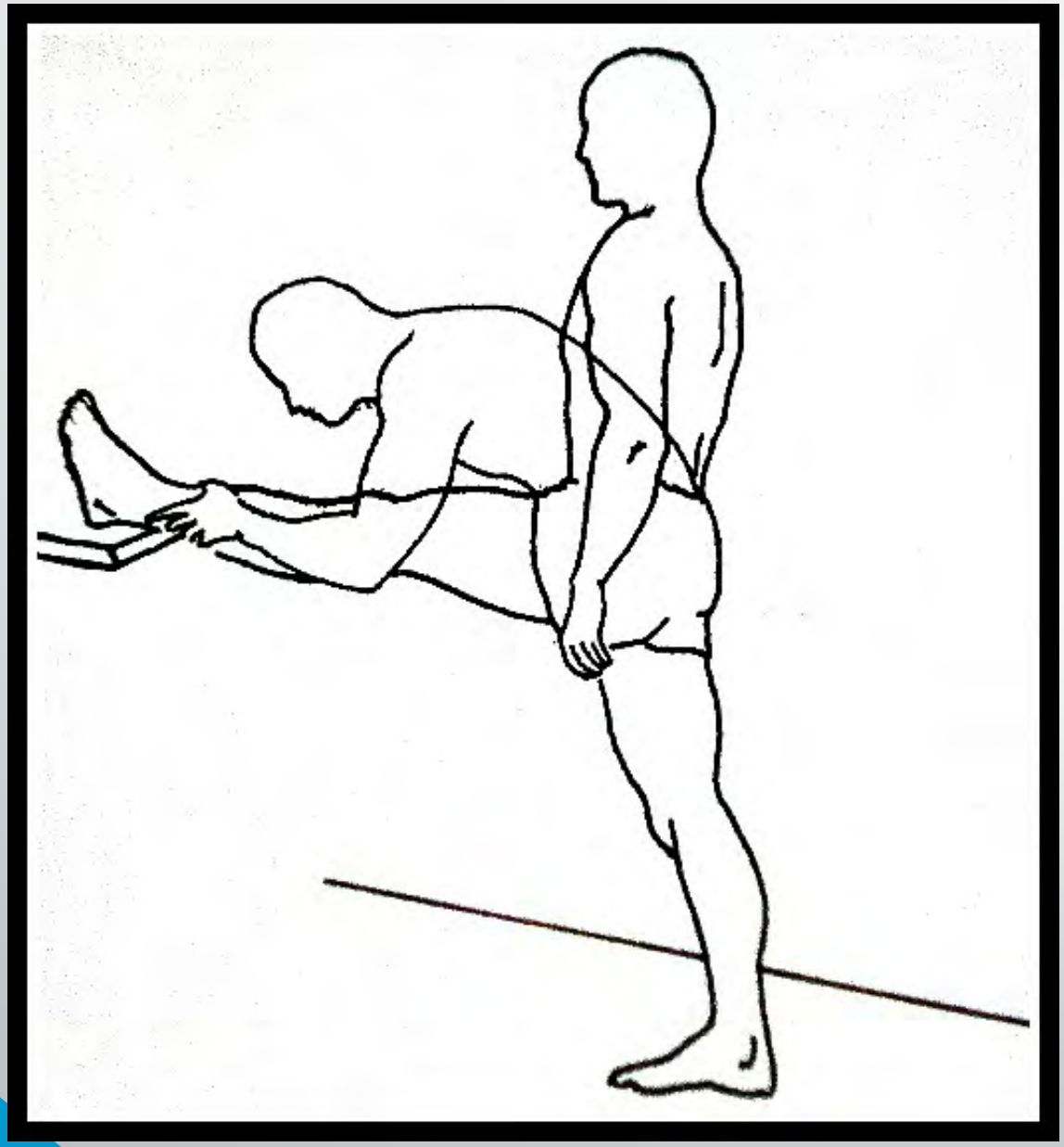
Clinical diagnosis

Most patients complain of a pain, of varying intensity, on palpation at the proximal insertion of the hamstrings, while manual testing borne by the flexor muscles of the buttocks and can even fit into a normal range. Even the peripheral neurological tests generally appear normal. Generally, the patient reports a feeling of discomfort at insertional proximal during testing of flexibility, although they may not show significant deficits.

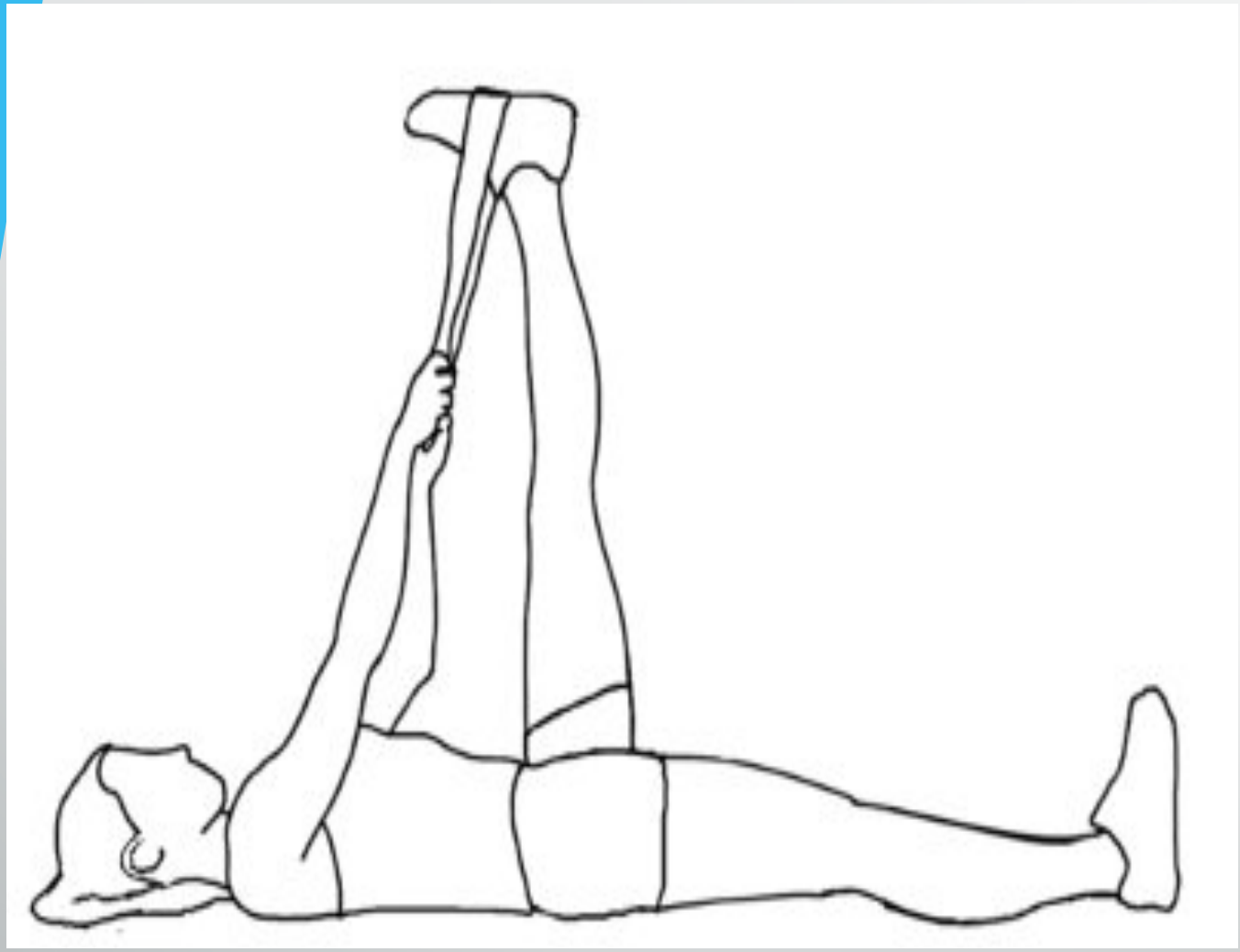
Clinical diagnosis

While running dell'Hamstring-Stretch Test (HST) will have a positive in the case of evocation of pain evident at the level of the proximal hamstring insertion. Clinical tests similar to HST, with the same purpose, are the Puranen-Orawa Test and Bent-Knee Stretch Test. Since the HS often involves a ipotonotrofia of the abductor muscles of the thigh, it is not uncommon that the Trendelenburg test is positive on the affected side. Depending on the degree level compression of the sciatic nerve patients may show a radicular symptoms more or less evident.

Running dell'**Hamstring-Stret**
Test requires that the operator ma
a rapid hip flexion immediat
followed by an equally rap
extension of the leg on the thi
The test is positive if it evokes a p
elective.



In **Puranen-Orawa Test** the pati
performs an active stretching of
hamstring muscles in the upri
position. Again the test is positive
causes pain to the level elect
proximal insertion of the flexor.



In **Bent-Knee stretch** the te
subject carries out with the a
of a band or a rope stretchi
active flexor muscle from t
supine position. The test
positive if it evokes pain electi
at the insertion of the proxim
hamstring.

Clinical diagnosis

Generally the activity of the race is not totally prevented but, in any case, greatly restricted. Usually the pain is exacerbated by running uphill, downhill and during the sprint, remaining instead quite content while running at low speed performed on flat ground. Typically the patient with HS refers the onset of painful symptoms elective at the proximal insertion of the flexor muscles of the thigh in maintaining the sitting position especially on hard surfaces.

Differential Diagnosis

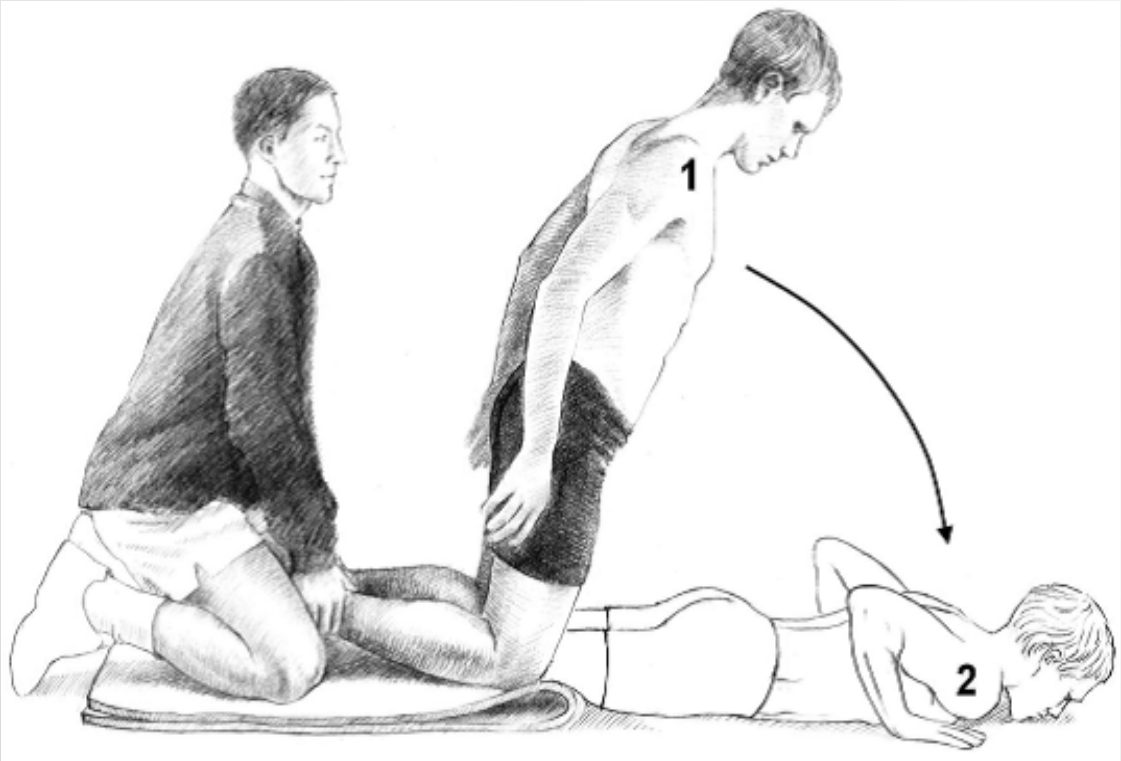
- Possible indirect injury of the hamstring
- Piriformis syndrome
- Ischial bursitis
- Sciatica
- Chronic compartment syndrome of the thigh
- Deep hematomas
- Soft tissue tumors.

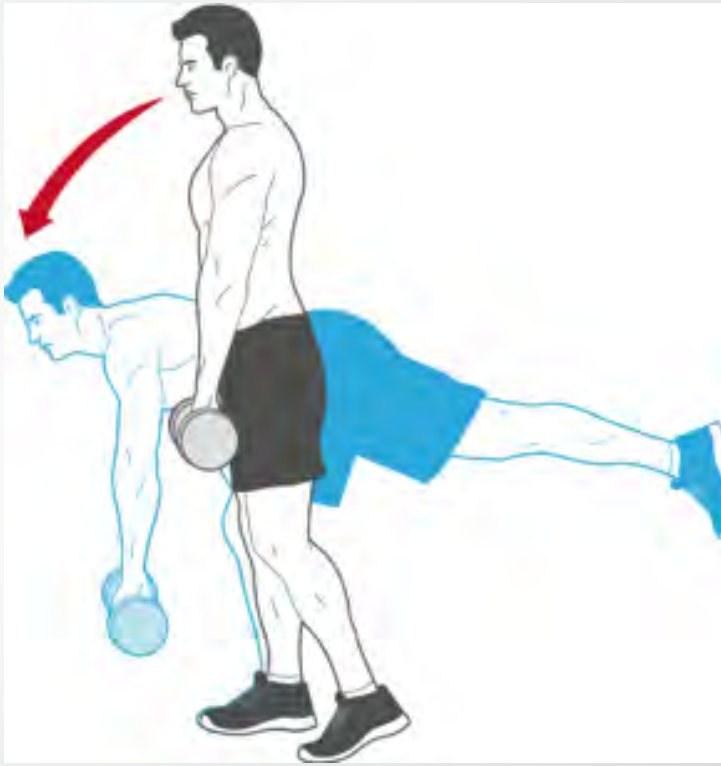
Conservative treatment

- Postural assessment and osteopathic treatment
- Soft tissue mobilization
- Stretching and stand in various forms and methods of the muscles of the hamstring
- eccentric conditioning of the hamstring
- Core stabilization.

Hamstring SYNDROME ESERCISES

- Nordic curl eccentric hamstring strengthening
- Single leg deadlift
- lGymball hamstring curls





- **Nordic curl eccentric hamstring strengthening**
- **Single leg deadlift**
- **Gymball hamstring curls**