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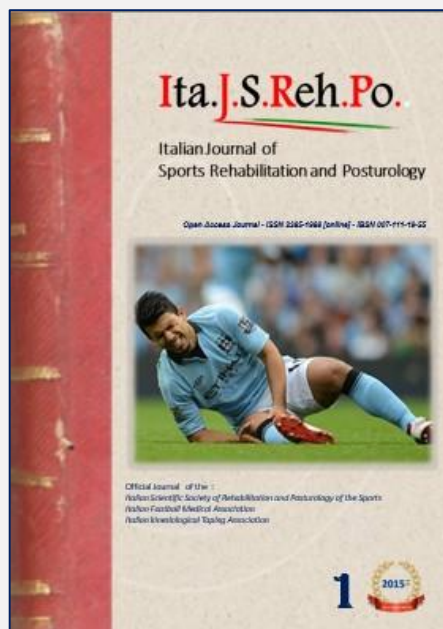
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
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
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
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
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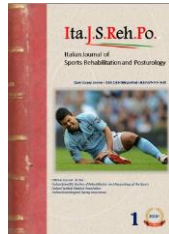
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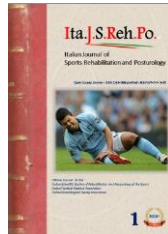
Syndrome of overuse of the shoulder in windsurfing and kinesiologic taping

Authors : Bellia Rosario

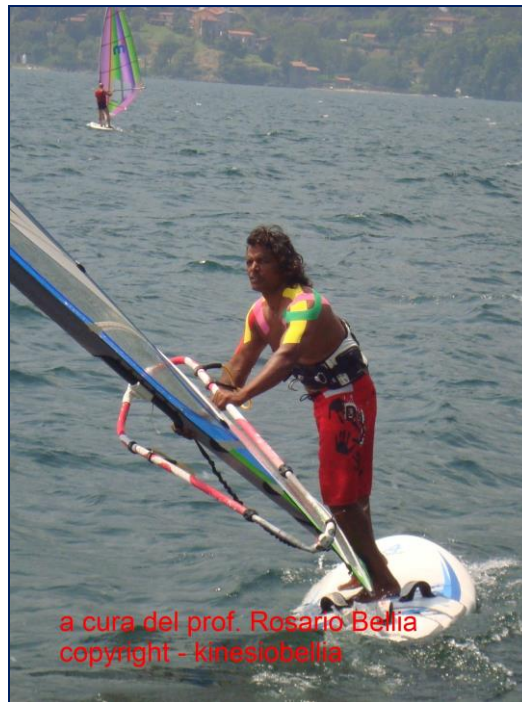
President of the Italian kinesiologic Taping Association
Professor of kinesiologic taping in master's degree at the University of Milan, Naples. Palermo
Professor of taping kinesiologico® at University of Valencia (Spain) in 2010
For ten years the physiotherapist Italian national team in roller skating race – FIHP

Abstract

The traumas that occurs in water sports are evolving in both percentage and in specific diseases; it is different from just ten years ago, when, for example, sports such as windsurfing or water skiing had not yet had the current spread mass. In windsurfing are found: a) acute injuries - of the osteoarticular (contusions, fractures) or mio-capsuloligamentous apparatus (distortions, distractions, lacerations, tendon rupture) b) chronic wounds (technopathies) statistically more frequent among these are the postural back pain, bursitis and insertional tendinopathy. The specific technopathies of windsurfers should be part of a thorough prevention program. Diseases of windsurfers are mainly of traumatic type and sometimes by functional overload (overuse). The shoulder, subjected to "overuse", may be involved in each of its components, so the technopathies of the windsurfers' shoulder often include overload diseases. Fundamental condition for a biomechanically correct movement of the shoulder: the head of the humerus remains centered in the glenoid during movement You have to analyze the patterns of recruitment of different muscles to prevent functional overloading caused by incoordination of the biomechanical activation of the kinetic chains. (Sahrmann's kinesiopathologic concept) It is the most common consequence for unbalanced repeated requests that are submitted to all capsule ligamentous structures of the scapulo-humeral. This it has been applied a proprioceptive rehabilitation program of technical movements of traction on the boom (dry), using the Thera-band elastics, simulating the technical action with perceptive- motor. (R. Bellia Syndrome of overuse of the shoulder in windsurfing and kinesiologic taping - Ita J Sports Reh Po 2015 ; 2 ; 1 ; 132 -142 ; ISSN 2385-1988 [online] - IBSN 007-111-19-55



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Photo 1

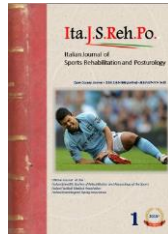
In windsurfing (Photo 1) are found:

- a) acute injuries - of the osteoarticular (contusions, fractures) or mio-capsuloligamentous apparatus (distortions, distractions, lacerations, tendon rupture)
- b) chronic wounds (technopathies) statistically more frequent among these are the postural back pain, bursitis and insertional tendinopathy.

The specific technopathies of windsurfers should be part of a thorough prevention program. The traumas that occurs in water sports are evolving in both percentage and in specific diseases; it is different from just ten years ago, when, for example, sports such as windsurfing or water skiing had not yet had the current spread mass. Diseases of windsurfers are mainly of traumatic type and sometimes by functional overload (overuse). The anatomical location of the trauma is often borne by the shoulder girdle and associated muscles, joints being the articulation most stressed in traction.

The diseases that are found are:

- a) low back pain from overuse
- b) overload contracture of paravertebral muscles of the cervical spine
- c) subacromial impingement syndrome
- d) Inflammation of the tendon
- e) Overload contracture of the muscles of the shoulder girdle



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The shoulder, subjected to "overuse", may be involved in each of its components, so the technopathies of the windsurfers' shoulder often include overload diseases such as:

- 1) the impingement syndrome
- 2) uni and multidirectional subluxations
- 3) scapulo-humeral dislocations
- 4) the tendonpathies of the rotators cuff
- 5) pathology of the biceps complex
- 6) the synovitis, bursitis of "accessory" joints of the shoulder
- 7) acromion-clavicular arthropathy.

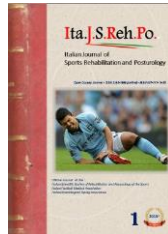
The pathogenesis of technopathies Overuse windsurfing can often be attributed even to natural predispositions:

- 1) capsular ligamentous laxity
- 2) imbalance of the intrinsic muscles of the shoulder
- 3) posture changes, such as an increase in dorsal kyphosis, which makes it difficult to slip on the rib of the scapula.

Sometimes technopathies can be determined by a pre-existing deficiency of stabilizing ligaments of the shoulder (glenohumeral and scapular) and by insufficient blood supply under stress of the rotators cuff. Distractive forces at the shoulder as a reaction to the action of wind on the sail (Photo 2)



Photo 2



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The distractive forces of the wind on the sail are absorbed on the shoulder by the synergic stabilizing muscles of the shoulder; according to the handle of the boom (if in supination and pronation of the hand), it is more or less stressed the biceps, with consequences on the humeral head and the clutch on the front of the glenoid ring. The supraspinatus, the little and big round will be working together to a modulation of the constant tension.

Balancing forces couples of the shoulder

1. An important couples of forces acting on a frontal plan is formed by the deltoid and the supraspinatus muscle.
They guarantee the cranio-caudal stability of the glenohumeral joint.
2. The force exerted before the subscapularis muscle and posteriorly by infraspinatus and minor round is another important pair of forces acting on a transversal plan and that contributes to anterior-posterior stabilization of the glenohumeral joint.
3. Another pair of forces, key in the movement of abduction of the humerus, is composed of upper trapezius muscle and serratus.

The results of both muscles have the function to externally rotate the lower angle of the scapula, by making come up the acromial vault.

- a) Etiopatogenesi and biomechanics of the shoulder

During the boom gripping and intense traction the stabilizing muscles "modulate" their activation to stabilize the position of the humeral head, also to control the deceleration of the extremities. A small deficiency of a muscle stabilizer, static and dynamic, leads to an important effect on the entire shoulder function. Fundamental condition for a biomechanically correct movement of the shoulder: the head of the humerus remains centered in the glenoid during movement.

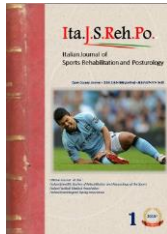
This is ensured by the synergistic muscle tone of the muscles:

1) thoraco-scapular muscles:

- Trapezius (upper, middle, bottom) – scapula levator
- The rhomboids (large and small) - serratus
- minor Pectoralis

2) thoraco-humeral muscles:

- Pectoralis major - latissimus dorsi



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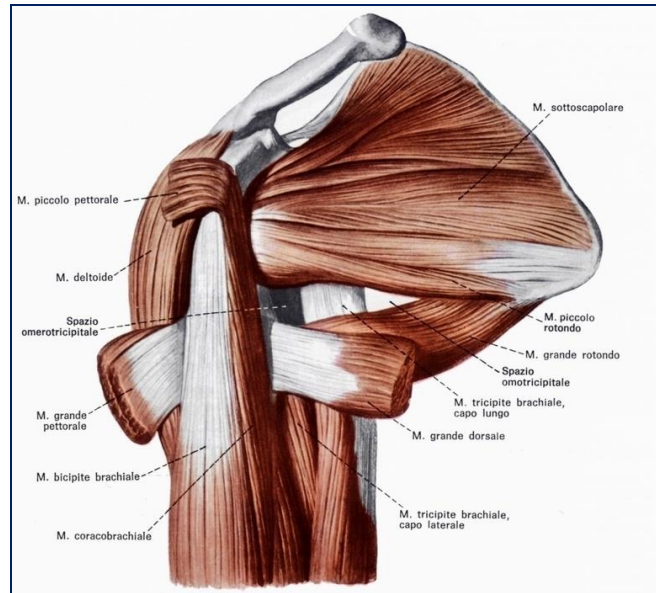


Table 1

3) scapular-humerous muscles (Table1) :

- The deltoid (rear, middle, front) - small round
- Large Round - supraspinatus
- Infraspinatus - subscapularis

4) humeral muscles of interest in the movement of the shoulder:

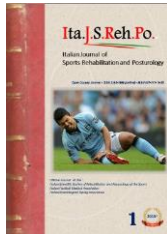
- Brachial Triceps (long head) – coracobrachial

You have to analyze the patterns of recruitment of different muscles to prevent functional overloading caused by incoordination of the biomechanical activation of the kinetic chains. (Sahrmann's kinesiopathologic concept)

The stability is in fact physiologically guaranteed by static and dynamic stabilizers (table 2,3):

The static stabilizers are:

- a) joint capsule
- b) ring
- c) Ligaments (glenohumeral upper, middle, bottom, and coracohumeral)



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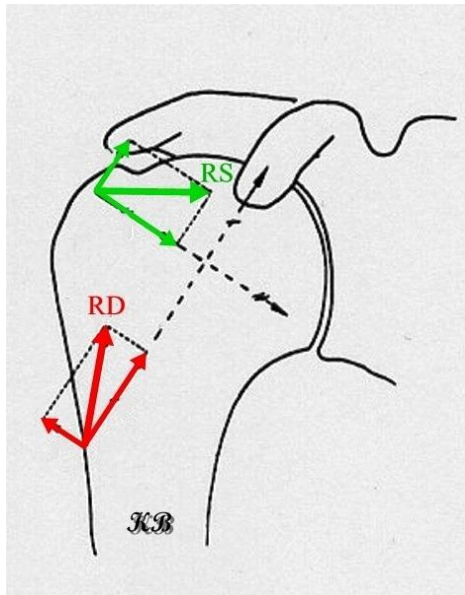


Table 2

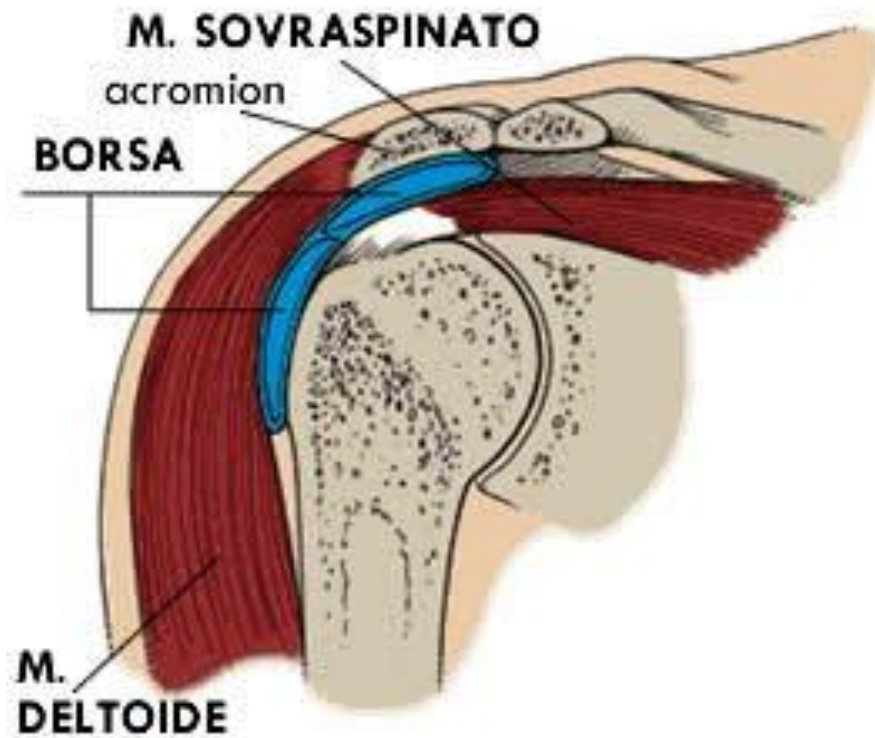
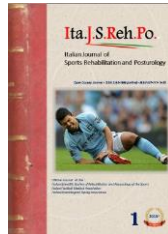


Table 3



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The stability is in fact physiologically guaranteed by static and dynamic stabilizers: The dynamic stabilizers, that ensure the centering of the humerus in the glenoid during the movement are the humerus girdle muscles of the shoulder. Jobe ('92) has classified the muscles involved in the movement of the shoulder girdle in :

- a) Protectors of the glenohumeral joint: subscapularis, major teres, infraspinatus, minor teres, supraspinatus
- b) Rotators of the scapula: trapezius, scapula levator, rhomboid, minor pectoralis, serratus
- c) Humerus positioners: deltoid, major pectoralis, dorsal latissimus.

The rotator cuff tendinitis : It is the most common consequence for unbalanced repeated requests that are submitted to all capsuloligamentous structures of the scapulo-humeral. The posterior - superior glenoid impingement may also occur because the humeral anterior shift allows the bottom surface of the tendon of the upper and infraspinatus muscle to have a point of "friction" against the posterior superior glenoid rim.

c) Conservative treatment

1) Physical Therapy

- a) TECAR
- b) Laser
- c) Ultrasound
- d) Magnetotherapy
- e) Interactive neuroregulators

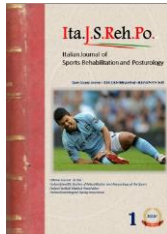
1. Muscle re-education (compensation program)

It has applied a "compensation" program of the hypotonic muscles to have a synergistic effect with the stretching exercises of the retracted muscles.

Thus, toning of the muscles that are stretched and hypotonic: trapezius, subscapularis, and so on. Stretching exercises, analytical stretching of the muscles retracted: biceps, anterior deltoid, supraspinatus, etc.

2. Application of kinesiologic taping (Photo 3,4,5,6)

During physical activity: to stabilize joint and muscle support lacking.^{1,2} (Photo 3,4,5,6)



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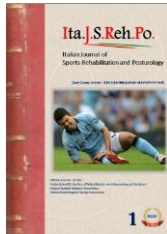


Photo 3



Photo 4

- The rehabilitation phase: to decompress the inflamed joints, drain the fluid inflammatory, relax the retracted muscles ¹



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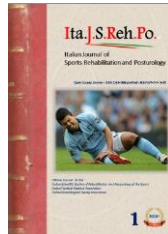
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Photo 5



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Photo 6



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3. proprioceptive re-education of technical movements to prevent overuse

You have to analyze the patterns of recruitment of different muscles to prevent functional overloading caused by incoordination of the biomechanical activation of the kinetic chains.

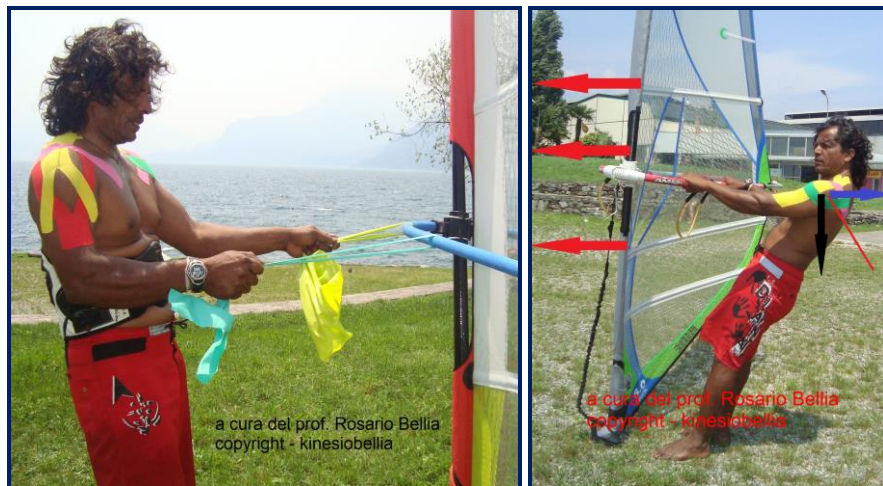


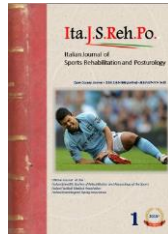
Photo 7 (Kinesiopathologic concept by Sahrmann).

Thus it has been applied a proprioceptive rehabilitation program of technical movements of traction on the boom (dry), using the Thera-band elastics, (Photo 7) simulating the technical action with perceptive-motor exercises:

4. proprioceptive re-education of technical movements to prevent overuse

Conclusions and considerations

It is clear that, as in the case of windsurfers, the functional overuse of the shoulder is due to a biomechanical intense action against some of the muscles of the rotators cuff; then the goal will be to balance the muscle tone of the hypotonic muscles and lengthening the retracted muscles; some muscles that function mutually in a movement, often play antagonistic actions in other movements of the shoulder. Preventing muscle imbalances must be a primary objective to avoid having to stop sports activities because of shoulder pain syndrome.



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Reference

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All the photos of the bendaggis that are brought in the article are treated by the books:

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2. R. Bellia – Il taping kinesiologico Metodo Koreano nella traumatologia sportiva moderna – marzo 2012

The image anatomical they are drawn by the book:

- a) Netter F. Atlas anatomia humana, Edizione Masson, Madrid 2001

Other bibliographical references:

- b) Shirley A. Sahrmann – Valutazione Funzionale e Trattamento delle Sindromi da Disfunzione del Movimento – Utet Milano 2002
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