

ASPECTS OF KINETIC REHABILITATION IN INFRASPINATUS SYNDROME

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Key words: assessment, infraspinatus syndrome, rehabilitation

Abstract:

Infraspinatus syndrome is defined as a condition of frequently painless atrophy of the infraspinatus muscle caused by suprascapular neuropathy.

We made a study of 20 subjects, average of age were 38 years, most of subjects were athletes and only 3 subjects have not been athletes. The pain has an insidious onset and is described as a deep, dull, aching discomfort. Assessment methods included: physical assessment and functional assessment used specific test for shoulder mobility and stability. Rehabilitation objectives of this phase are: maintain shoulder mobility, prevention of musculotendinous retraction, promote scapular stabilization and shoulder stabilization, increase motor and muscle control, coordination

How we seen is important to make a good assessment for decide which is the best way for rehabilitation and for return to play. So we consider that specific assessment can help us to observe the dynamic evolution in infraspinatus syndrome. Much more if we apply earlier the rehabilitation protocol that we propose is possible to reduce the risk of recidive and the risk to increase shoulder injuries.

Introduction

Infraspinatus syndrome is a part of cuff tendinitis and is at the border between neurologic aspects and traumatic injuries of shoulder. Infraspinatus syndrome is defined as a condition of frequently painless atrophy of the infraspinatus muscle caused by suprascapular neuropathy. The syndrome typically (1,2) causes symptoms that mimic those of rotator cuff tendinopathy, and the diagnosis is often overlooked until the condition fails to respond to a traditional rotator cuff treatment program. The athletes come to us for shoulder pain, limits of mobility that favorise development of stiffness and instability. Most of situations can be treat by physical therapy, kinetic therapy and also drugs therapy, but also exist some situations in which surgical intervention must to be done, because is need to made a reconstruction (3) of rotator cuff. Infraspinatus syndrome is the result of overuse at shoulder joint in sports such as baseball, volleyball, and racquet sports, in which when his or her arm is in an overhead or abducted position (2). Also this syndrome exist at nonathletes persons. Specific of this syndrome is presence of infraspinos atrophy. The incidence of this syndrome was in our studies and our medical practice, around 15-20% at volleyball players.

Etiopathogenics aspects in infraspinatus syndrome

The first point is the biomechanic aspect and anatomic structure of suprascapular nerve that has two sites of potential entrapment: suprascapular notch and spinoglenoid notch(9). Second site represent the most common site of entrapment. Involvement of this site induce isolated atrophy and weakness of the infraspinatus muscle that characterizes infraspinatus syndrome. During the movement of the scapula like protracts and retracts with functional use of the upper limb, some traction of the suprascapular nerve can be expected to occur at 1 or both notches. So this nerve will be expose to damaging sheer stress. All these aspects are base on few observations regards spinoglenoid ligament that becomes taut when the ipsilateral upper limb is adducted across the body or internally rotated and so suprascapular nerve is vulnerable to direct compression by the medial border of the spinati tendons at the spinoglenoid notch (9,10) when the upper limb is abducted and externally rotated. Many studies reveal an ischemia that can involve disorders of suprascapular nerve and that is caused by migration of posttraumatic microemboli from the suprascapular artery to the vasa nervorum. Because glenohumeral joint is the most mobile joint from human body, is possible to increase the risk of shoulder instability.(4) Why? Because during movement ligamentous structures and the fibrocartilaginous glenoid labrum provide additional static stability, particularly at the extremes of glenohumeral motion. The supraspinatus and infraspinatus muscles (8) dynamically stabilizes the shoulder joint through a precise system of force couples and agonist-antagonist coactivation, keeping the humeral head centered in the glenoid socket. Suprascapular nerv disorders disturbs this mechanism and could potentially result in proximal migration of the humeral head with secondary impingement of the supraspinatus tendon.

Material and method

We made a study of 20 subjects, average of age were 38 years, most of subjects were athletes and

only 3 subjects have not been athletes. Most of them are typical patient, young athletes who reports vague posterior shoulder pain. The pain has an insidious onset and is described as a deep, dull, aching discomfort. Activities exacerbate symptoms including weakness and reduce endurance in performing overhead.

Assesment methods included: physical assesment and functional assesment (14,15) used specific test for shoulder mobility and stability.

Physical assesment showed to us: atrophy of infraspinatus muscle, sometimes in two cases we observed supraspinatus muscle involvement depend of the site nerve entrapment. Muscle test showed to us presence of weakness of shoulder during abduction and external rotation, pain during movement and limits of mobility (12,13). We used some specific tests for functional assesment like:Neer test for explore the integrity of infraspinatus muscle during specific movement , internal and external rotation associate with arm flexion. If the pain increase or the movement is impossible the test is positive.

Hawkin test is use for explore also the integrity of rotator cuff muscles during arm flexion at 90⁰ elbow flexion 90⁰ and rotation, internal and external. Presence of pain or instability not permit the movements, and so the test is positive(15).

Others test including imagining assesment, like plain radiographic for exclude bony trauma, and also for exclude cervical spine disorders that can involve ranches of brachial plexus. Shoulder MRI may reveal supraspinatus or infraspinatus muscle edema(5) in acute cases and atrophy with fatty replacement in more chronic cases.Also we used electrodiagnostic using Myomed 134 for electromyography(5,6,11) that evidence a denervation , with positive sharp waves and fibrillation potentials.

Propose of complex rehabilitation porgramme:

In our research we have two categories of subjects, one of them is in acute phase that needed surgical intervention and chronic phase. We excludet first lot and we apply a conservator rehabilitation programme at second lot. But even this lot present two phases: acute phase and recovery phase(12,13).

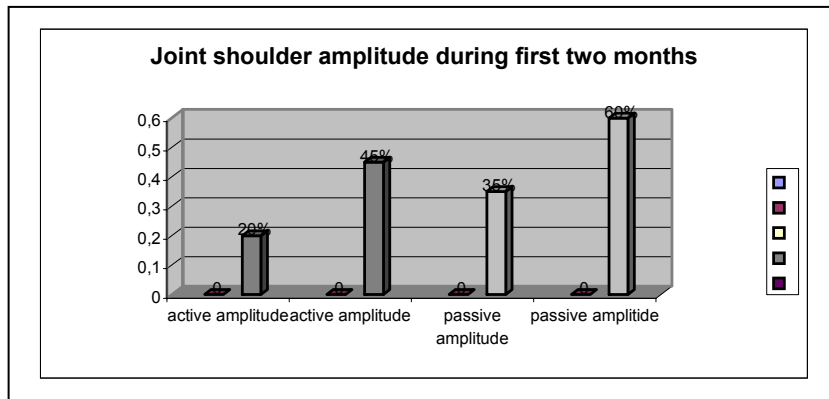
Acute phase- has a rehabilitation programme that depend on severity of clinical phenomenous, because in absence of compression we used conservator treatment . So in this situation we poposed a programme of physical exercises for scapular stabilization, increase rotator cuff muscle tonus. So we obtain a possible prevent of impingement syndrome. Also we recomand this objectifes of rehabilitation, even after acute phase, because we can improvement flexibility of shoulder. We added also proprioceptive exercises(7,14) for increas shoulder stability, muscle force, endurance and muscles balance around shoulder joint. Physical methods included ultrasonic waves and lasertherapy using Danson laser equipment and protocols for tendinitis disorders.

Even most of authors dont present chronic phase of infraspinatus syndrome, we consider that this is the recovery phase. During this phase we prepare the athletes to return to play at soon at possible. Rehabilitation objectifes of this phase are: mentain shoulder mobility, prevention of muscletendinous retraction, promote scapular stabilization and shoulder stabilization, increase motor and muscle control, coordination.For increase muscle force and balance we used exercises with progressive weight beginning from 500g, 8-10 repetitions, 3sets, but under the control of pain and cardiovascular status.For that reasons we used izotonic contraction, concentric and excentric contraction, and if is possible to use usually exercises that are the part from training programme of our athletes. The end of one rehabilitation programme must includ plyometric exercises for development muscle power. Plyometric method can improvement muscle force(6,7) because it combine force and speed contraction, facilitate nervous control and muscle contraction. Also the phisiologyc base of this method is stretching at high speed or shortening at high speed contraction. So exist three phases: excentric, concentric contraction and abosorbtion of mechanic schok.

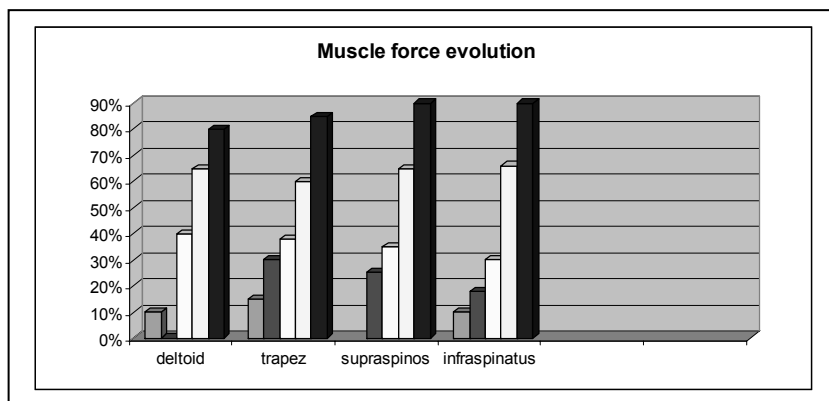
The recovery phase is during 6-8months even if the athletes begin the sport activity, we must to accord attention for continue the final rehabilitation programme, for prevent another disorders.Return to play come when our athletes did not have pain, instability or another discomfort. If all these persist our athletes return to play step by step. Of course we consider that is important to have a prophylactic programme that must includ warm –up and cool-down exercises and also is important to use orthetic devices during sport activity.

Results and discussion:

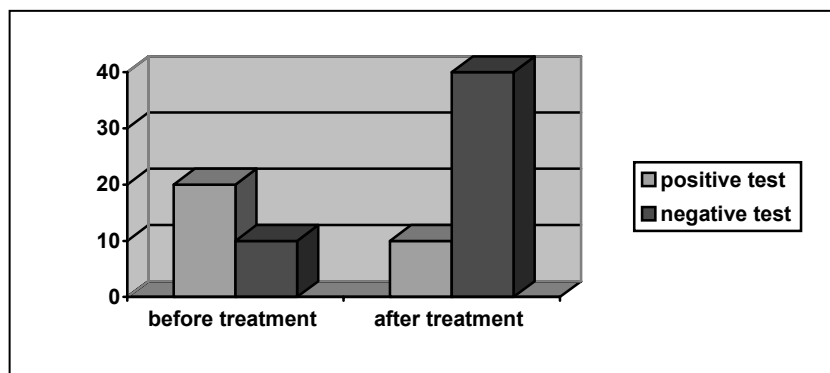
Present the dynamic evolution of specific test and pain because we consider that these are important for periodical assesment of our patients.



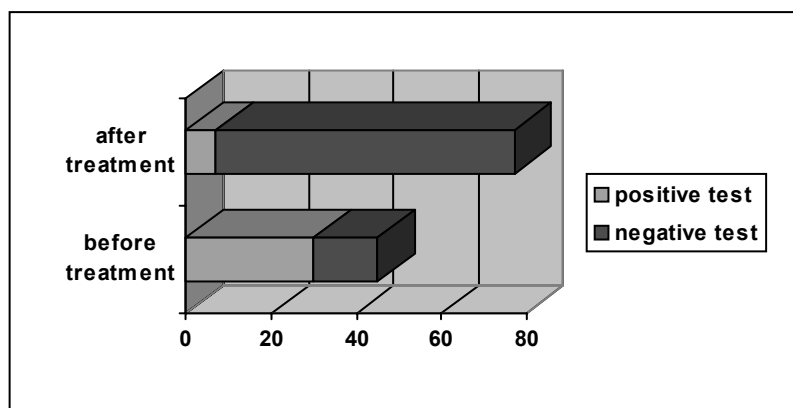
Graphic 1-increase of joint amplitude during treatment



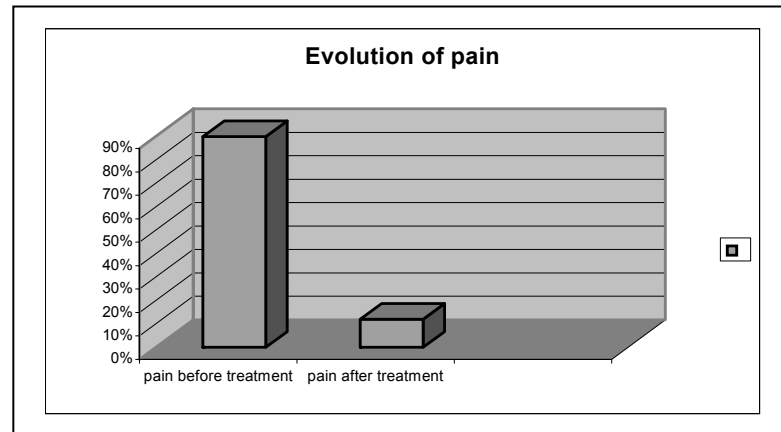
Graphic 2-evolution of muscle force



Graphic 3-evolution of Neer test



Graphic 4-evolution of Hawkin test



Graphic 5- pain evolution

How we seen is important to make a good assesment for decide wich is the best way for rehabilitation and for return to play. So we consider that specific assesment can help us to observe the dynamic evolution in infraspinatus syndrome. Much more if we apply earlier the rehabilitation protocol that we propose is possible to reduce the risk of recidive and the risk to increase shoulder injuries. Most individuals with suprascapular neuropathy are asymptomatic and compete with little to no discernible performance deficit. This observation complicates the issue of how to handle the return-to-play decision.

In symptomatic athletes, a more restrictive course seems reasonable. Once the athlete can perform sport-specific skills in a pain-free manner, they can return to play. Athletes who undergo surgical decompression should participate in an appropriate postoperative rehabilitation program to restore their strength, flexibility, and endurance before returning to play.

No definitive study findings implicate specific spiking styles in suprascapular neuropathy; thus, providing technical advice about biomechanics to volleyball athletes with suprascapular neuropathy is difficult. Additional considerations remain unanswered; for example, the appropriate amount of skill training necessary to minimize the risk of volleyball shoulder is unknown.

The prognosis for a favorable clinical outcome is good. At the time of diagnosis, affected athletes report surprisingly little functional limitation. According to the literature, most cases respond favorably to either conservative treatment programs or, when indicated, surgical intervention, and most athletes were able to return to their prior level of sports participation.

ASPECTE ALE REABILITĂRII PRIN MIJLOACE KINETICE IN SINDROMUL INFRASPINOS

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Cuvinte cheie: evaluare, sindrom infraspinos, recuperare.

Rezumat

Sindromul infraspinos este o entitate patologica a complexului coiful rotatorilor situat la limita leziunilor neurologice si traumatice produse la nivelul umarului.

Studiul a fost realizat pe un lot de 20 de subiecti, varsta medie fiind de 38 de ani, cei mai multi sportive si numai 3 nesportivi. Subiectii au acuzat durere in regiunea umarului, cu debut insidios insotita de discomfort, slabiciune musculara si impotenta functionala.

Observam ca o evaluare completa, specifica permite stabilirea unui program de recuperare foarte tintit. Utilizarea testelor specifice in combinatie cu evaluarea clinica si electromiografica permite monitorizarea programului de recuperare. Aplicarea cat mai precoce a programului de recuperare, imediat dupa disparitia fenomenelor acute va permite reducerea riscului recidivelor.

Introducere:

Sindromul infraspinos este o entitate patologica a complexului coiful rotatorilor situat la limita leziunilor neurologice si traumatice produse la nivelul umarului.

Se defineste ca fiind un sindrom caracterizat prin durere in regiunea umarului, cu atrofie determinate de neuropatia nervului suprascapular. Sindromul tipic se manifesta clinic prin tendinopatie (1,2), iar diagnosticul este adesea supraestimat. Sportivii se prezinta umar dureros, limitarea mobilitatii care favorizeaza dezvoltarea unei redorii articulare si a unei instabilitati.

Cele mai multe din situatii pot beneficia de tratament fizical kinetic si medicatie antialgica, dar sunt si situatii in care este necesara interventia chirurgicala prin care se poate realiza o reconstructie a coifului rotatorilor (3). Sindromul infraspinos este rezultatul suprasolicitarii complexului articular al umarului in basket, volei, si in general in sporturile in care se solicita o exagerare a abductiei bratului. De asemenea acest sindrom poate fi intalnit si la persoane care nu practica o activitate sportiva, in mod constant. Ceea ce este insa specific acestui sindrom este prezenta atrofiei muscului infraspinos. Din punct de vedere al incidentei ;literatura de specialitate mentioneaza o frecventa de 15-20% la jucatorii de volei.

Aspecte etiopatogenice in sindromul infraspinos

Etiopatogenia acestui sindrom tine in primul rand de biomecanica umarului si de pozitia nervului suprascapular , care este supus unui process de epansament (9). In timpul miscarii umarului scapula prin miscarile sale de protractie si retractie induce o tractiune a nervului suprascapular.

Nervul suprascapular este supus si unui proces de compresiune mai ales in cursul rotatiei interne a bratului (9,10) dar sic and se realizeaza abductia si rotatia externa a bratului. In aceste conditii se poate produce o ischemie si choar aparitia unor microemboli care migreaza din artera suprascapulara in structurile sanguine ale fascicului nervos.

Un alt aspect etiopatogenic este cel legat de biomecanica umarului care priveste si stabilitatea acestuia, stabilitate in care intervin muschii supraspinos si infraspinos, muschi care formeaza un cuplu de forte agonist-antagonist, care mentine capul humeral in cavitatea glenoida. Prezenta neuropatiei suprascapulare crfeaza un cerc vicios, pentru ca favorizeaza dezvoltarea unui sindrom de impingement care intereseaza tendonul muschiului supraspinos si implicit o alterare a mecansimului de echilibru infra-supraspinos.

Materiale si metode

Studiul a fost realizat pe un lot de 20 de subiecti, varsta medie fiind de 38 de ani, cei mai multi sportive si numai 3 nesportivi. Subiectii au acuzat durere in regiunea umarului, cu debut insidios insotita de discomfort, slabiciune musculara si impotenta functionala.

Evaluarea a inclus: evaluarea clinica, functionala (14,15) si teste specifice pentru mobilitatea si stabilitate. Evaluarea clinica ne-a semnalat atrofie in regiunea infraspinosului, evaluarea functionala a aratat limitarea abductiei si rotatiei externe a bratului, (12,13). Testele specifice utilizate au fost: testul Neer, care permite explorarea integritatii muschiului infraspinos. Testul este pozitiv in cazul in care manevrele de rotatie a bratului asociate cu flexia bratului, declanseaza durere.

Testul Hawkin exploreaza integritatea coifului rotatorilor in conditiile flexiei bratului la 90⁰, cotul in flexie la 90⁰ cu rotatie interna si externa a bratului. Testul este pozitiv daca aceste manevre declanseaza durerea si se remarca instabilitate(15).

Din punct de vedere imagistic am utilizat examenul radiologic, pentru a exclude leziunile osoase; rezonanta magnetica nucleara(RMN), examinare care poate semnala prezenta unui proces de tip edematos la nivelul muschilor infra/supraspinos (5). Electrodiagnosticul a fost posibil cu ajutorul electromiografului Myomed 134 (5,6,11) care a evidentiat denervare.

Programul de recuperare propus si aplicat

In acest studio am avut doua categorii de subiecti, o categorie de subiecti care au beneficiat de interventie chirurgicala, acesti pacienti aflandu-se in faza actuta. A doua categorie a fost reprezentata de pacientii care au fost supusi unui tratament conservator.

In cadrul celui de al doilea lot au existat pacienti in faza acuta si pacienti in faza cronica.

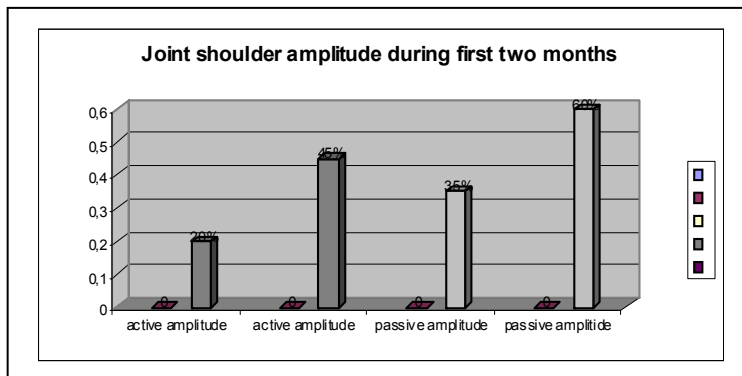
In faza acuta am aplicat un program de reabilitare bazat pe exercitii de stabilizare a scapulei si de crestere a tonusului coifului rotatorilor. Astfel am reusit sa reducem riscul instalarii unui sindrom de impingement. Am asociat acestui program, un program de exercitii de tip proprioceptiv care permite cresterea stabilitatii umarului, fortei musculare, rezistentei musculare si a echilibrului muscular la nivelul umarului (7,14). Terapia fizicala s-a bazat pe teraf[ia cu ultrasunete, laserterapie.

Disparitia fenomenelor acute a fost urmata de trecerea spre o faza pe care noi o consideram cronica, desi multi autori nu recunosc existenta unei asemenea faze. Totusi in aceasta situatie de granita noi am adoptat un program de reintoarcere la activitatea sportiva care a avut urmatoarele obiective: mentinerea mobilitatii umarului, prevenirea retractiei musculotendinoase, promovarea stabilizarii scapulei pe torace, cresterea controlului motor si muscular, coordonarii. In acest scop am propus exercitii cu incarcare 500g, 8-10 repetitii, 3 seturi, sub controlul durerii si al statusului cardiovascular. Finalul programului de reabilitare s-a bazat pe contractii izotone, excentrice si concentrice dar si exercitii de tip pliometric, care combina forta cu viteza de contractie, facilitand controlul motor(6,7). Faza de refacere completa a parcurs 6-8luni, o perioada lunga dar care ne asigura ca nu pot apare recidive. Momentul reintoarcerii in activitatea sportiva este dat de absenta durerii, instabilitatii sua a altui discomfort.

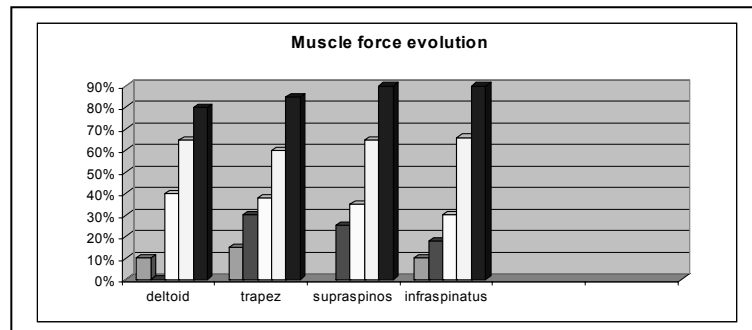
De asemenea noi am recomandat utilizarea unei oretze de sustinere a bratului, a capului humeral in cavitatea gelnoda.

Rezultate si discutii

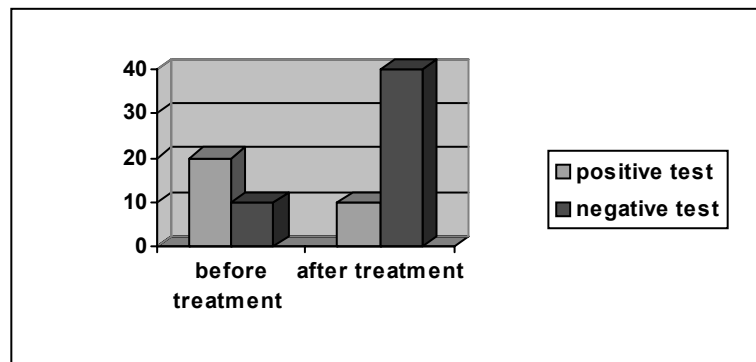
In cadrul rezultatelor vor fi prezentate evolutia durerii si a testelor specifice:



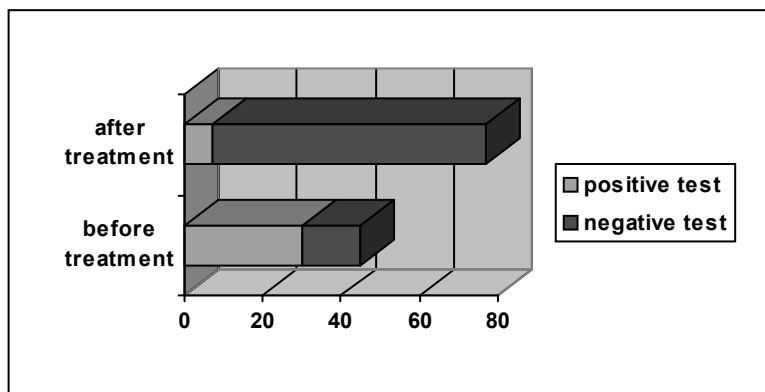
Grafic 1-cresterea amplitudii de miscare



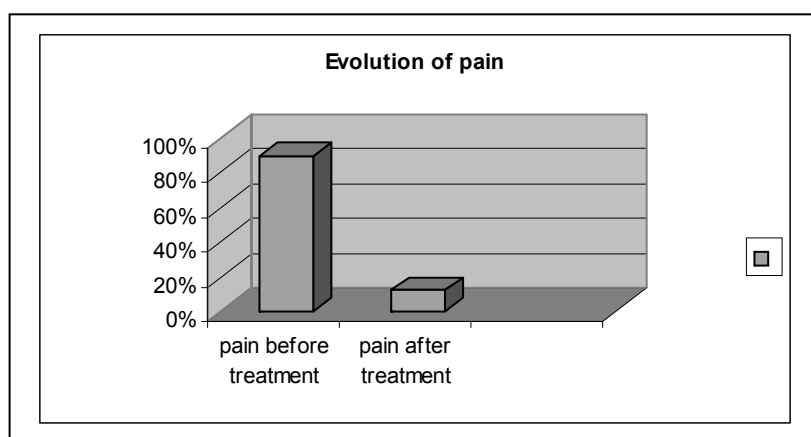
Grafic 2-evolutia fortei musculare



Grafic 3-evolutia testului Neer



Grafic 4-evolutia testului Hawkin



Grafic 5- evolutia durerii

Observam ca o evaluare completa, specifica permite stabilirea unui program de recuperare foarte tintit. Utilizarea testelor specifice in combinatie cu evaluarea clinica si electromiografica permite monitorizarea programului de recuperare. Aplicarea cat mai precoce a programului de recuperare, imediat dupa disparitia fenomenelor acute va permite reducerea riscului recidivelor.

Problema care se pune totusi este legata de subiectii care sunt asimptomatici o perioada lunga de timp existand perioade in care apare un deficit motor. Acest aspect pune in dificultate decizia medicala recuperatorie si mai ales decizia legata de practicarea sportului.

Nu exista o opinie definitiva legata de abordarea din punct de vedere recuperator, a pacientilor cu sindrom infraspinos, pentru ca nu exista o abordare completa din punct de vedere biomecanic, abordare care ne-ar permite eliminarea cauzelor care conduc la leziunea nervului suprascapular.

Prognosticul favorabil depinde de momentul adresarii serviciului de traumatologie si recuperare, dar si de conduita terapeutica, mai exact tratament conservator sau interventie chirurgicala.

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ASPECTS REGARDING THE PSYCHOLOGICAL PREPARATION OF SPORTSMAN: PRECOMPETITIONAL STRESS

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Key words : performance, victory, training, competition, stress, methods.

Abstract

The competition is the main feature of sport. The sportsman is preparing to get the best performance in terms of racing with others.

The psychological factor is crucial in getting valuable performances in big races, when faced with athletes of high level training technique, tactics and fitness.

Every sport has a specific physical training feature, particular to the race, which has to be formed early. More and more specialists assigned to it a share of over 50% in obtaining a victory.

Introduction

Hypothesis: This paper work is the analysis of one of the main physical disturbing factors of sport performance: "stress". It has been formed considering the importance attributed to the psychological preparation of sportsman in order to obtain the best results in competitive level.

The preparation for a competition includes the entire set of actions, measures and efforts undertaken by sports and coaches in order to achieve superior performance.

The main feature of sports activity is to obtain performances in competitive conditions, of racing. The competition ranks and confirms the values regardless of efficiency or the results obtained in the training sessions. Through this, the subjective importance of the competition, as well as the objective one, is explained.

Both sportsman and coaches, live at maximum intensity the time before or during the exhibition of sporting competitions.

These feelings are directly proportionate to the importance of that competition or to its significance towards them.

The importance of mental preparation for competition :

The competition, psychologically and sociologically is represented as a "context of conflict" between groups or individuals with the aim of obtaining a reward following the outcome. This reward, being of