

Cumulative trauma disorders in upper limbs: rehabilitation

Authorship: The Brazilian Association of Physical Medicine and Rehabilitation
Brazilian Society of Clinical Neurophysiology
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Participants: Gustavo Fadel, Viviane Duarte Correia, Arlete Camargo de Melo Salimene, Fábio Marcon Alfieri, Marta Imamura, Chennyfer Dobbins Paes da Rosa, Wanderley Marques Bernardo, Linamara Rizzo Battistella

DESCRIPTION OF THE EVIDENCE COLLECTION

METHODOLOGY

Articles in the MedLine (PubMed) database and other research sources were reviewed, with no age limit. The search strategy used was based on structured questions in the PICO format (from the initials: Patient, Intervention, Control and Outcome).

The descriptors used were:

QUESTION 1: (Tendinopathy OR Cumulative Trauma Disorders) AND (Human Engineering AND prevention and control)

QUESTION 2: (Tendinopathy OR Cumulative trauma Disorders) AND (Models, Educational OR Psychology, Educational OR Teaching OR Education OR Health Behavior)

QUESTION 3: (Tendinopathy OR Cumulative Trauma Disorders) AND (Motor Activity) AND (prevention and control)

QUESTION 4: (Tendinopathy OR Cumulative Trauma Disorders) AND (Rest OR Sick Leave)

QUESTION 5: (Tendinopathy OR Cumulative Trauma Disorders) AND (Restraint, Physical OR Orthotic Devices)

QUESTION 6: (Tendinopathy OR Cumulative trauma disorders) AND (Hyperthermia, Induced OR Diathermy OR ultrasonic therapy OR shortwave therapy OR ultrasound OR infrared rays OR microwaves)

QUESTION 7: (Tendinopathy OR Cumulative Trauma Disorders) AND (Acupuncture Therapy)

QUESTION 8: (Tendinopathy OR Cumulative Trauma Disorders) AND (Physical Therapy Modalities)

QUESTION 9: (Tendinopathy OR Cumulative trauma disorders) AND occupational therapy

QUESTION 10: (Tendinopathy OR cumulative trauma disorders) AND (physical exercise program OR exercise therapy OR muscle stretching exercises OR exercise movement techniques)

QUESTION 11: (Tendinopathy OR Cumulative Trauma Disorders) AND (analgesics OR paracetamol OR acetaminophen OR dipyrone)

QUESTION 12: (Tendinopathy OR Cumulative Trauma Disorder) AND (Anti-Inflammatory Agents, Non-Steroidal OR NSAIDs OR aspirin OR indomethacin OR diclofenac OR piroxicam OR tenoxicam OR meloxicam OR phenylbutazone OR ibuprofen OR naproxen OR nimesulide OR Cyclooxygenase 2 Inhibitors OR valdecoxib OR celecoxib OR etoricoxib)

QUESTION 13: (Tendinopathy OR cumulative trauma disorders) AND (antidepressant OR duloxetine OR venlafaxine OR amitriptyline OR nortriptyline OR clomipramine OR imipramine OR desvenlafaxine OR fluoxetine OR sertraline OR citalopram OR mirtazapine OR paroxetine OR tricyclic antidepressant OR dual antidepressant)

QUESTION 14: (Tendinopathy OR Cumulative Trauma Disorders) AND (Surgery OR Surgical Procedures, Operative)

QUESTION 15: (Tendynopathy OR Cumulative Trauma Disorders) AND (Social Support OR Psychology, Educational)

These descriptors were used for cross-correlating in accordance with the theme proposed in each topic of the PICO questions. After analysis of this material, articles relative to the questions were selected that originated evidence on which to base the present guideline.

QUALITY OF EVIDENCE AND STRENGTH OF RECOMMENDATIONS:

A: Experimental or observational studies of highest quality.

B: Experimental or observational studies of lower quality.

C: Case studies (uncontrolled studies).

D: Opinion with no critical evaluation, based on consensus; physiological studies, or animal models.

OBJECTIVE:

To provide information on the treatment of RSI/WMSDs in upper limbs

CONFLICT OF INTEREST:

The authors have no conflicts of interest to declare.

INTRODUCTION

Repetitive Strain Injuries (RSI) or work-related musculoskeletal disorders (WMSDs) are a growing problem in the world population, especially in industrialized countries.¹ The recognition, control and treatment of these occupational diseases has become a major concern for the medical community, employees, employers, and governments due to health risks and the costs associated with them.²

The identification of WMSDs must take into account the work history and presence of pain, but may also include weakness, burning, paresthesia, tremor, lack of coordination, stiffness, and loss of strength, among others.³ With the increase of mechanized activities since the 1980's, there has been an increased presence of occupational diseases such as WMSDs, especially those associated with the neck and upper limb (UL) regions, which are attributed to increased use of computers and other machines. Some of the principal diseases associated with WMSDs of the upper limbs are tenosynovitis and tendonitis of the hand and wrist, Guyon's canal syndrome, carpal tunnel syndrome, medial and lateral epicondylitis, and rotator cuff and other shoulder pathologies.⁴

In Brazil, as in most countries, there are no accurate estimates of the prevalence and incidence of upper-limb WMSDs. The national information system of the National Health System does not include WMSD data, which impairs the ability to collect information on all the workers affected. The available data are those collected by the Social Security System, that includes only "formal" workers registered with the Consolidation of Labor Laws, and does not represent half of the economically active Brazilian population. Thus there is no official survey on the subject, but it is generally believed there has been an increase in the number of cases of WMSD since 1987, when this group of disorders was first entered into the Social Security register.⁴

In the United States of America (USA), it is estimated that 15-20% of workers have occupational diseases, of which 56% have upper limb WMSD.^{5,6} In Europe the prevalence among workers in general with neck/shoulder pain is 25% with arm pain at 15%,⁷ with prevalence significantly increased among workers who use computers, reaching up to 62% when symptoms of neck, shoulder and arms are included.⁸ A Dutch study shows that 28% of the general population had symptoms of WMSD.⁹

The diseases associated with WMSDs of the upper extremities usually occur during the productive phase of the citizens' lives and are related to reduced work productivity, increased medical visits and consumption of health products,¹⁰ as well as decreased quality of life.¹¹ A survey in the Netherlands indicates that when totaled, the costs of reduced productivity, sick leave, inability to work, and medical expenses, spending related to neck-injury WMSDs could reach the sum of 2.1 billion euros.¹⁰

With the expectation that the use of computers will rise, and with longer workdays, and work overload that many workers from diverse

areas are suffering, it is believed that the number of cases of WMSDs of the upper limbs will grow in coming years the world over,^{12,13} and consequently, the costs associated with treatment. However, best practices based on scientific evidence are not yet defined for the prevention and treatment of upper-limb WMSDs.

1. WHICH ERGONOMIC MEASURES ARE MOST EFFECTIVE IN PREVENTING UPPER LIMB-WMSD?

An intensive ergonomic program including evaluation of the work area by a trained professional, environmental adaptations, acquisition of new furniture, and recommendations to pause and correct posture during work, significantly reduces discomfort in the shoulders, forearms and fingers, bilaterally ($p < 0.05$), however there is no reduction in pain¹² (B).

Short breaks from work activities at 20- or 40-minute intervals as a way to relieve muscular tension are able to reduce the pain and discomfort in the shoulder ($p < 0.05$), forearm, lower back, and neck, especially with breaks every 20 minutes. It is important to emphasize that there was no decrease in productivity with either interval program ($p < 0.05$)¹³ (B).

Relaxation training and muscle stretching in the hands, wrists, arms, shoulders and lower back reduces the risk of developing upper-limb WMSDs² (B).

RECOMMENDATION

Ergonomic measures such as postural orientation, adaptation of furniture, and short breaks at intervals of 20 and 40 minutes are recommended, because they can reduce complaints of pain and discomfort and thus prevent the onset of upper-limb WMSDs in workers using computers. The implementation of ergonomic practices in other work environments such as production lines and factories lacks sufficient evidence to be recommended; more studies are needed to establish their efficacy (B).

2. ARE EDUCATIONAL MEASURES BENEFICIAL IN THE PREVENTION OF UPPER-LIMB WMSD?

An educational program based on the prevention of pain in the shoulders, arms, and neck with individual evaluation of workstations and a visit to a doctor, can reduce shoulder and neck complaints by only 9% after 12 months, which is not significant ($p > 0.05$)¹⁴ (B).

RECOMMENDATION

There is no quality evidence that educational programs alone are beneficial in the prevention and treatment of WMSD (B).

3. IS WORKPLACE EXERCISE EFFECTIVE IN THE PREVENTION OF UPPER-LIMB WMSDs?

There were no randomized clinical trials found that show the efficacy of workplace exercise in the prevention of upper-limbs WMSDs. Therefore, we used a cross-sectional study that conducted the survey from the social, economic, occupational and demographic profile of the Canadian population. For this study, 58,622 full-time active workers were surveyed for 3 months. The survey showed that physical activity is associated with a lower prevalence of WMSD: inactive subjects, 74.9%; active subjects, 25.1%, OR = 0.84; CI 99%, 0.75 to 0.95, $p < 0.01$ ¹⁵ (B).

RECOMMENDATION

The practice of physical activities at work or leisure, is associated with a lower prevalence of upper-limb WMSD and may be indicated in its prevention. Future randomized controlled studies may indicate which of the different activities may be more beneficial **(B)**.

4. CAN REST OR REDUCTION OF WORK ACTIVITIES BE RECOMMENDED FOR THE TREATMENT OF UPPER-LIMB WMSDs?

There was no scientific evidence found that rest or reduction of activities are indicated in the treatment of WMSD in upper limbs.

RECOMMENDATION

The reduction of activities or absolute rest can not be recommended because there is no scientific evidence to support their application. More studies are needed on this subject.

5. IS IMMOBILIZATION RECOMMENDED IN THE TREATMENT OF UPPER-LIMB WMSD?

There were no studies found in the literature on the use of immobilization in the treatment of upper-limb WMSD.

RECOMMENDATION

There is no evidence in the literature to support the use of immobilization techniques in the treatment of WMSDs of the upper limbs and therefore its use can not be recommended.

6. CAN THE USE OF MECHANICAL TECHNIQUES BE RECOMMENDED IN THE TREATMENT OF UPPER-LIMB WMSD?

In patients with calcific tendonitis with arthroscopic removal indicated, the use of high energy shock waves (2500 impulses of shock waves with a density of 0.36 Mj/mm² energy flow) was proven beneficial. Subjects were randomly divided into two groups: group I, with needling (with 10 mL of 1% lidocaine hydrochloride) guided by ultrasound (7.5 MHz linear ultrasound, 7 cm) and shock waves, and group II, with shock waves only. Only one procedure was required with each patient to show significantly improved scores on the Constant shoulder scoring system. Radiographs showed disappearance of the calcific deposit in 60.0% of the shoulders in group I and 32.5% in group II ($p < 0.05$). Significantly better clinical and radiological findings were obtained in group I than in group II. Arthroscopic removal of the deposit was avoided in 32 patients in group I and 22 in group II. There were no serious side effects recorded.

Local hematomas, small petechial hemorrhages with a diameter of no more than 20 mm, and local swelling may occur, but all are resolved within seven to ten days. Ultrasound-guided needling, in combination with high-energy shock wave therapy is more effective than shock wave therapy alone in patients with symptoms of calcific tendonitis, showing significantly higher rates of removal of calcium deposits, better clinical outcomes, and a reduction in the need for surgery¹⁶ **(B)**.

Treatment with a 904 Ga-As laser, frequency 50 Hz, intensity 40 mW and energy of 2.4 J/cm², plus plyometric exercises (5 sets of 8 repetitions of the wrist extensors, with a 1-minute rest interval between each set) reduces pain at the end of 8 weeks of therapy in patients with tennis shoulder (means before and after the VAS: 6.95 ± 9.81 and 3.41 ± 6.26; ANVOVA, $p < 0.01$)¹⁷ **(B)**.

RECOMMENDATION

The use of needling guided by ultrasound in combination with high-energy shock wave therapy is recommended for the treatment of calcific tendonitis in the shoulder. The use of laser therapy (GaAs 904 nm), with a frequency of 50 Hz, intensity of 40 mW and energy of 2.4 J/cm² (2), with plyometric exercises of the wrist extensors, can also be recommended **(B)**.

7. IS THERE EVIDENCE OF IMPROVEMENT IN UPPER-LIMB WMSD PAIN WITH ACUPUNCTURE TREATMENT?

There were no clinical trials found that show evidence for the use of acupuncture in treating the pain of WMSDs in the upper limbs.

RECOMMENDATION

No evidence was found in the literature in favor of the use of acupuncture in the treatment of WMSDs of the upper limbs and therefore its use can not be recommended.

8. IS PHYSICAL THERAPY INDICATED IN THE TREATMENT OF UPPER-LIMB WMSDs?

Treatment supervised by a physiotherapist once a week, (consisting of manual compression of myofascial trigger points (mtrps), manual stretching of the muscles and intermittently applying cold compresses), combined with instructing patients to perform stretching and relaxation exercises in their homes, and receiving guidance on ergonomics and posture, improves shoulder function (means ± standard deviations for the dash scale, pre- and post-treatment: 30.3 ± 16.6 And 18.4 ± 12.3) And reduces the current moment pain (means ± standard deviations for vas: 31.9 ± 24.3 And 17.2 ± 19.5)¹⁸ **(B)**. After 12 weeks, 55% of patients report improvement from "slightly better" to "completely recovered" (ARR = 0.40 CI_{95%} = 0.195 - 0.605; NNT = 3 CI_{95%} = 2 - 5). The average number of muscles with active MTrP was reduced (mean difference: 2.7 CI 95%, 1.2 to 4.2)¹⁸ **(B)**.

Laser treatment with a 904 Ga-As laser, with a frequency of 50 Hz, intensity of 40 mW and energy of 2.4 J/cm², combined with plyometric exercises (5 sets of 8 repetitions of the wrist extensors, with a one-minute rest interval between each set) reduces pain at the end of 8 weeks of therapy in patients with tennis shoulder (means before and after the VAS: 6.95 ± 9.81 and 3:41 ± 6.26; ANVOVA, $p < 0.01$)¹⁷ **(B)**.

RECOMMENDATION

Manual compression of MTrPs, stretching muscles, and intermittent cold application weekly, combined with daily stretching and relaxation exercises at home, applying warm compresses, and ergonomic guidance can be recommended for the reduction of shoulder pain **(B)**. The use of 904 Ga-As laser, at a frequency of 50 Hz, intensity of 40 mW and energy of 2.4 J/cm², with plyometric exercises of the wrist extensors can also be recommended **(B)**.

9. IS OCCUPATIONAL THERAPY RECOMMENDED IN THE TREATMENT OF UPPER-LIMB WMSDs?

Ten weeks of active muscular training and fitness exercise, with the objective of improving muscle condition for long-lasting static postures according to Mesendieck/Cesar techniques (practices for re-education of body postures and movements through exercises integrating body

and mind, to automatically and consciously improve body posture in the Activities of Daily Life using audio, visual, and proprioceptive feedback from muscles and joints), provides only mild, not significant reductions in upper limb pain one year after treatment (VAS and $CI_{95\%}$ values at baseline and after one year, respectively: 2.88, $CI_{95\%} = 2.43$ to 3.33 and 1.41; $CI_{95\%} = 0.91$ to 1.91 vs. 2.59, $CI_{95\%} = 2.07$ to 3.11 and 1.37; $CI_{95\%} = 0.91$ to 1.82; $p > 0.05$)¹⁹ (B).

A practical training program with an occupational therapist which included stretching and strengthening of muscle groups and sore joints, performed by the patients themselves several times daily during work breaks, for a period of 3 months (with supervision 4 times by the therapist responsible), combined with ergonomic education including planning of activities, breaks, and workstation adaptations, reduces pain at rest in patients with non-specific, mild to moderate ($0 < VAS < 5$) pain in the hand and forearm related to computer work (means, pre-and post-treatment: 1.55 ± 1.37 and 0.64 ± 1.05 ; $p = 0.009$)²⁰ (B).

RECOMMENDATION

Occupational therapy (Mesendieck/Cesar technique) with physical training of the postural muscles or postural re-education through proprioception with 2 sessions per week for 10 weeks, is not recommended as effective in the reduction of non-specific, work-related pain in the upper-limbs. On the contrary, therapy utilizing stretching and strengthening of muscle groups and joints of the hands and forearm, performed by patients themselves during work breaks, after training sessions with monthly supervision, and ergonomic adjustments in the workplace guided by the therapist, can be recommended to reduce upper limb pain (B).

10. DO PHYSICAL EXERCISES IMPROVE PAIN IN UPPER-LIMB WMSDs?

Manual treatment with deep friction massage on the supraspinatus muscle, radial nerve stretching, scapular and glenohumeral joint mobilization, combined with proprioceptive neuromuscular facilitation techniques, or the performance of glenohumeral and scapulothoracic exercises supervised by a physiotherapist 3 times a week for 3 months, produces the same results as an unsupervised home exercise program, performed daily with 3 sets of 10 repetitions for 3 months, significantly reducing shoulder pain (ANOVA, $p < 0.05$)²¹ (B).

Treatment supervised by a physiotherapist once per week, (consisting of manual compression of myofascial trigger points (MTrPs), manual stretching of the muscles and intermittent cold application, combined with daily muscle stretching and relaxation exercises at home, applying warm compresses, and ergonomic guidance improves shoulder function (means \pm standard deviations for the DASH scale, pre-and post-treatment: 30.3 ± 16.6 and 18.4 ± 12.3) and reduces the current moment pain (means \pm standard deviations for VAS: 31.9 ± 24.3 and 17.2 ± 19.5)¹⁸ (B). After 12 weeks, 55% of patients reported improvement from "slightly better" to "completely recovered" (ARR = 0.40 $CI_{95\%} = 0.195 - 0.605$, NNT = 3 $CI_{95\%} = 2 - 5$). The average number of muscles with active MTrP was reduced (mean difference: 2.7 $CI_{95\%}$, 1.2 to 4.2)¹⁸ (B).

RECOMMENDATION

Manual exercises combined with deep friction massage on the supraspinatus muscle, radial nerve stretching, glenohumeral and scapular mobilization, and proprioceptive neuromuscular facilitation

techniques, performed daily in 3 sets of 10 repetitions for 12 weeks can be recommended as they show good results in pain reduction.²¹ Manual compression of MTrPs, stretching muscles, and intermittent cold application weekly, combined with daily muscle stretching and relaxation exercises at home, application of warm compresses, and ergonomic guidelines can be recommended for the reduction of shoulder pain (B).

11. CAN COMMON ANALGESICS BE PRESCRIBED FOR THE TREATMENT OF UL-WMSDs?

There is little basis regarding this issue in the scientific literature. One study was found with a group treated with acetaminophen, however the number of subjects was very low ($n = 6$)²² (C).

RECOMMENDATION

There is not sufficient evidence in the literature to support the use of simple analgesics in the treatment of WMSDs of the upper limbs (C).

12. CAN NON-STEROIDAL ANTI-INFLAMMATORIES BE PRESCRIBED FOR THE TREATMENT OF UL-WMSDs?

A single subacromial injection of 20 mg of the non-steroidal anti-inflammatory tenoxicam prepared with 5 ml of 1% lignocaine was inferior in reducing symptoms and improving shoulder function when compared to a single injection of 40 mg of methylprednisolone combined with 5 ml of 1% lignocaine. After six weeks of treatment, there is improvement in the Constant Murley shoulder score of 19.5 (IQ: 33) and 6.5 (IQ: 15.75) (Mann Whitney, $p = 0.003$) in patients receiving corticosteroids or anti-inflammatory, respectively²³ (A).

A single application of 10 mg of the steroid triamcinolone, when combined with the anti-inflammatory nimesulide (100 mg orally twice a day for a week) does not produce better results in reducing symptoms in patients with de Quervain syndrome compared to the use of corticosteroids alone. After three weeks there is complete remission of symptoms in 67% and 68% of patients with and without nimesulide, respectively. Recurrence of symptoms was also the same 20 months after application ($\chi^2 = 0.39$, $p = 0.53$)²⁴ (A).

The use of either nimesulide 100 mg or diclofenac 75 mg twice daily for 2 weeks showed that both treatments have similar effects in patients with acute shoulder (bicipital tendonitis and/or subdeltoid bursitis). There is a reduction in the mean symptom score from 15.4 ($CI_{95\%}$: 14.6-16.2) to 4.2 ($CI_{95\%}$: 14.8-16.3) in those receiving nimesulide and 15.5 ($CI_{95\%}$: 14.8-16.3) to 5.4 ($CI_{95\%}$: 4.1-6.6) in those receiving diclofenac ($p = 0.54$). Gastrointestinal adverse events are the most common and account for approximately 40% to 70% of the adverse events in both drugs, respectively. There is a tendency for nimesulide treatment to be better tolerated, with fewer patients reporting adverse events (Fisher test, $p = 0.07$) (ARR = 0.122 $CI_{95\%}$: -0.020 to 0.264; NNT = 8 $CI_{95\%}$: 4 to ∞)²⁵ (B).

The use of 200 mg of celecoxib or naproxen 500 mg twice a day for 2 weeks significantly reduced acute shoulder pain (shoulder tendonitis and subacromial bursitis) ($p < 0.05$) with neither treatment being superior to the other. However, it should be noted that the treatments were able to reduce pain a maximum of 50% (celecoxib after 14 days). The incidence of adverse events in the groups treated with celecoxib, naproxen, and placebo is comparable among the three groups with 36.7%, 36.0%, and 29.6% reporting adverse events, respectively, with the most common events being headache, dyspepsia, and nausea²⁶ (A).

RECOMMENDATION

The use of anti-inflammatory drugs as a substitute for the intra-articular injection of corticosteroids is not superior to the use of corticosteroid injection alone and therefore should not be recommended. There is evidence that the use of oral anti-inflammatory drugs may be prescribed for pain management when used alone. However, when combined with corticosteroid injection application, its use is not superior to the use of corticosteroids alone and should not be recommended due to the cost and adverse events associated with it **(A)**.

13. CAN THE USE OF ANTIDEPRESSANTS BE INDICATED IN THE TREATMENT OF UL-WMSDs?

There is little basis regarding this issue in the scientific literature. The use of amitriptyline 25 mg/day for 6 weeks in patients with various work-related joint problems in the upper limbs, including hand and wrist tendinitis, and medial and lateral epicondylitis among others, did not promote lower levels of pain compared to those treated with placebo (mean and standard deviation pre- and post-treatment groups, respectively: 4.7 ± 1.8 and 4.3 ± 1.8 , 4.0 ± 1.8 and 3.9 ± 1.9 , $p = 0.277$). However there are notable improvements in function (mean and standard deviation pre and post-treatment groups, respectively: 23.4 ± 111.9 and 19.5 ± 10.9 , 19.6 ± 10.6 and 18.7 ± 11.9 , $p = 0.023$) and well-being (mean and standard deviation pre- and post-treatment groups, respectively: 64.7 ± 9.4 and 64.9 ± 10.1 , 66.4 ± 8.3 and 64.0 ± 10.6 ; $p = 0.034$)²⁷ **(A)**.

RECOMMENDATION

There is little evidence that the use of low doses of amitriptyline may be beneficial for patients with upper-limb WMSDs, since there is no improvement in pain. There is a lack of solid basis in the literature to support the use of antidepressants in the treatment of upper-limb WMSDs and their use is not recommended **(A)**.

14. ARE THERE SURGICAL METHODS THAT MAY BE EMPLOYED IN THE TREATMENT OF UL-WMSDs?

There was no extensive evidence found in the literature of effective methods for the treatment of upper-limb WMSDs. Studies were found demonstrating the use of surgical techniques for inflammatory processes of nerves, tendons, and joints associated with traumatic, hematologic and degenerative causes, for example. But there is no evidence that surgical procedures are effective for the treatment of upper-limb WMSDs.

RECOMMENDATION

There is no evidence that standard surgical methods are effective in the treatment of the various processes of upper-limb WMSDs. One should opt for conservative treatments. Serious cases which do not respond to other treatments must be handled on a case-by-case basis and surgical procedure, if chosen, must be studied carefully.

15. ARE PSYCHOSOCIAL APPROACHES, WHEN COMBINED WITH OTHER CLINICAL INTERVENTIONS, BENEFICIAL IN THE TREATMENT OF UL-WMSDs?

Only two studies were found (via a review article²⁸) with psychosocial interventions, i.e. those in which the treatment is focused not only on medical issues, but also on the psychological

and social factors. Both studies provide limited scientific evidence of specific psychosocial interventions.

Treatment with 8 sessions of approximately 1.5 hours, 2 times per week with electromyographic biofeedback, or progressive sessions of muscular relaxation with the use of images, or a combination of these two therapies do not significantly reduce pain in patients with upper-limb WMSD, and after the reductions in the VAS scoring, they are respectively, from 17.3 to 13.9, from 21.1 to 17.7, and from 24.4 to 16.7 ($p > 0.05$). No treatment was superior to the others; only the relaxation therapy performed exclusively shows a trend of superiority over the other interventions²⁹ **(C)**.

A rehabilitation program including medication when necessary, referral for consultation with a physiotherapist focusing on ergonomics, stretching, and muscle strengthening with weekly visits for 6 weeks, combined with hypnosis sessions, significantly reduces pain in patients with upper-limb WMSD as measured by VAS, when compared to the same treatment without hypnosis (mean difference = -3.6; CI 95%: -5.1 to -2.0)³⁰ **(B)**.

RECOMMENDATION

There is limited evidence that psychosocial therapy including medical consultations, prescription medications if necessary, and referral to a physiotherapist with attention to ergonomics, stretching, and muscle strengthening, combined with hypnosis, may be beneficial in reducing pain in patients with upper-limb WMSDs. However, better quality studies are needed before this or other psychosocial therapies can be recommended in the treatment of upper-limb WMSDs **(B)**.

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