



Physiotherapy Efficacy of Mulligan Technique in Subacromial Conflict: Literature Review

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Abstract

General Information: The subacromial conflict is a disorder of gleno-humeral joint that results from compression of soft tissue. The Mulligan concept based on the biomechanical and anatomical concepts of the human body. Purpose: Evaluation of the effectiveness of the MulliGan technique in subacromial conflict. Methodology: The study is Review (Literature Review) and was conducted in 6 electronic databases. Randomized type studies were included in our study. The tests used to assess subacromial conflict were: Visual Analog Scale; Disabilities of the Arm, Shoulder and Hand; Short Form-36; Pressure pain threshold; Current pain severity; Numeric Rating Scale; Goniometer; Constant shoulder score. Results: From 65 studies found, only 6 include our study criteria. The study of Yanwu Wang, has the maximum scoring according to the Pedro scale, was evaluated with 10 points. Conclusions: The MulliGan technique resulted effective in treating subacromial conflict.

Keywords: Sub-acromial conflict, Mulligan concept, manual therapy

1. Introduction

Subacromial conflict is one of the most common scapular disorders that comes as compression of soft tissue compression in the subacromial space. This disorder can be present in many forms: from inflammation to degeneration of the sub-acromial bursa, rotator cuff muscles, and tendons.¹ It can come as a result of the degenerative process that occurs over time, as a consequence of overuse of the joint, tendon overload, tension or trauma. Also, external factors, in which inflammation and degeneration of the tendons occurs as a result of mechanical compression by some external tendon structures such as: incorrect posture and pathology of the acromion or coracoacromial arch may cause this pathology.² In terms of symptoms, subacromial conflict is associated with inflammation to degeneration of tendons and bursa, severe pain in the shoulder region and with aggravation of pathology the pain is felt even at rest. We also have inability to move the arm as well as scapular accelerations and hypertony of the external rotator cuff as a result of rapid eccentric load³. There are various forms and methods of rehabilitation of subacromial conflict. In the study of

Jalilpanah.P et.al were evaluated significant results in the trigger points of patients suffering from subacromial conflict when applied the technique of "dry needling combined with the technique of muscle energy". There are other studies evaluating the effectiveness of kinesiotaping on the muscular stability of the scapular circle ⁴. Also the "SHAM" technique proved effective in the rehabilitation of subacromial conflict and the recovery of articular ROM ⁵. However, the Mulligan technique finds use in subacromial conflict. It is based on the biomechanical and anatomical concepts of the human body. This concept realizes a accessories mobilization, often in the weight-bearing position, utilizes the active physiological or functional movement of the patient through a certain movement. This technique gives many positive results in articular ROM and muscle strength. In the case where no other pharmacological or physiotherapeutic treatment gives effect surgery is the last treatment used in these patients. The purpose of our study is to evaluate the efficacy of the MulliGan Technique in subacromial conflict.

2. Metodology

The study is the Reviw (Literature Review) type and was conducted during the period March-June 2020. Scientific studies were requested on six databases (PubMed, ScienceDirect, onlineiley online library, Cochrane Library, PMC, taylor & francis Online). In these databases, in order to find the studies, the key words were used was: Impingement syndrome, Mulligan concept, rottar cuff rehabilitation, exercise therapy, shoulder dysfunction. Based on keywords, were found 65 studies. Based on the exclusion and limitation criteria, 10 literature review studies were excluded, 10 abstract access studies, 10 studies referring to other types of subacromial conflict study such as: 2 experimental studies, 2 meta-analysis studies, 2 studies pilot, 4 clinical case studies and 25 randomized studies that presented the effectiveness of other physiotherapy techniques on subacromial conflict: 4 kinesiotherapy studies, 4 SHAM techniques, 5 exercise therapy, 2 modalities, 2 spencer's mobilization, 3 motor control retaining, and 5 that evaluated the effect of mulligan but on Adhesive capsulite and not on subacromial conflict. While 9 studies included the Mulligan technique in subacromial conflict rehabilitation. As a result, only 6 studies were reviewed. Because 3 of them were excluded they were before 2012. The studies were randomized. These studies were conducted from 2012 to 2019 and were all in English.

Inclusion criteria

- Patients with the presence of subacromial conflict for 3-6 months
- Positiv test like Neer test, Hawkins test, Resisted external rotation, Adduction test, Empty Can
- Pacient in 18-45 years old
- Pain in the shoulder region for more than 4 weeks
- Male and female patients
- Patients rehabilitated with the Mulligan concept.

Exclusion criteria

- Taking cortisone injections in the last 30 days
- Presence of fractures or tumor
- Patients with shoulder surgery
- Presence of cervical problems
- Patients with neurological and cardiac problems
- Patients who are rehabilitated with other techniques.

The tests which are used in the studies that are included in our literature review study in total are 8 international tests such as: Visual Analog Scale; Disabilities of the Arm, Shoulder and Hand; Short Form-36; Pressure pain threshold; Current pain severity; Numeric Rating Scale; Goniometer; Constant shoulder score.

3. Results

In table number 1 is the Prism diagram in which the following steps are explained to find the studies included in our literature review study. Based on keywords, 65 studies were found. Based on the exclusion and limitation criteria, 10 literature review studies were excluded, 10 abstract access studies, 10 studies referring to other types of subacromial conflict study such as: 2 experimental studies, 2 meta-analysis studies, 2 studies pilot, 4 clinical case studies and 25 randomized studies that presented the effectiveness of other physiotherapy techniques on subacromial conflict: 4 kinesiotherapy studies, 4 SHAM techniques, 7 exercise therapy, 2 modalities, 2 spencer's mobilization, 3 motor control retaining, and 5 studies evaluating the effect of mulligan but on Adhesive capsulite and not on subacromial conflict and 3 of them were excluded because they were published before 2012. Only 6 studies included the Mulligan technique in

subacromial conflict rehabilitation. As a result, only 6 studies were reviewed. The studies were case-controlled and randomized. In the 6 studies that participated the total number of subjects was 226 females and males. Studies include subjects aged 35-45 years.

Table 1: Diagrams Prizma

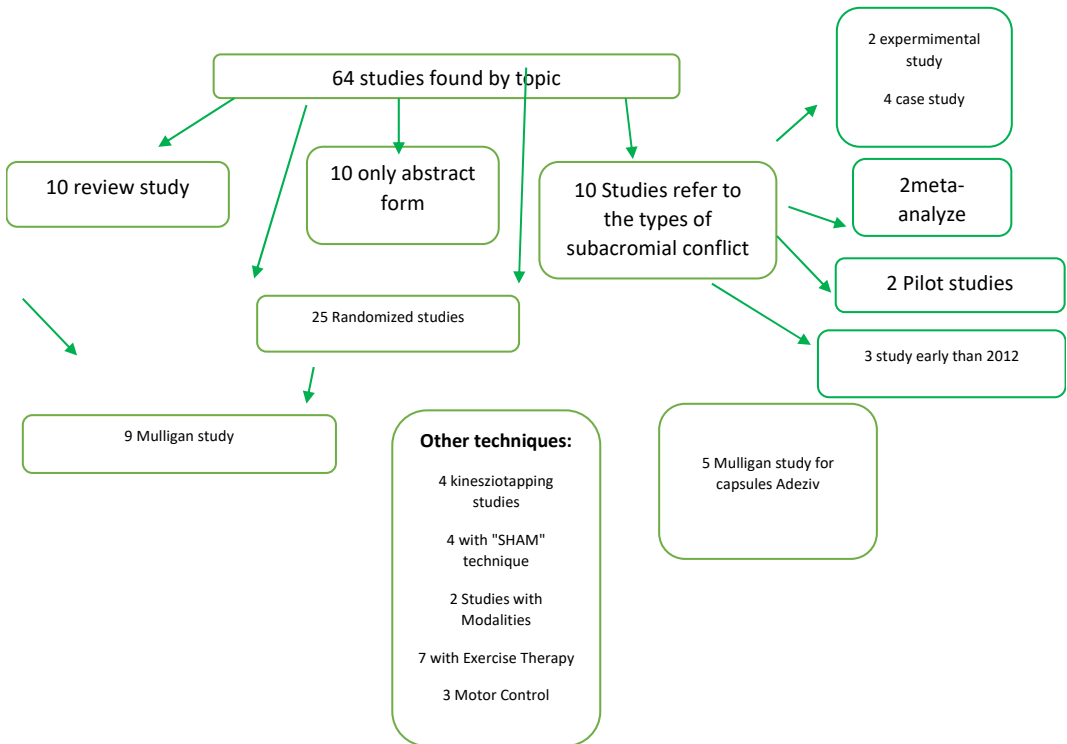


Table 2: Pedro scale

In this table are the points for each of the studies included in our study. We notice that it has the maximum point Yanwu Wang of nine points. However none of the studies received the maximum scoring according to the Pedro scale.

Autori	1	2	3	4	5	6	7	8	9	10	11	Pikët
Teys.P et.al Bisset.L	1	0	0	1	1	0	1	1	1	1	1	8
Meneka.Bet.al ⁷	1	1	0	1	0	0	1	1	1	1	1	8
Tarakic.D et.al Canadan.Z	1	1	0	1	0	0	1	1	1	1	1	8
Delgado.J ⁸ et.al Robers.E	1	1	0	1	0	0	1	1	1	1	1	8
Yanwu Wang et.al;Chongmin Wang ⁹	1	1	1	1	1	0	1	1	1	1	1	9
Kachingêe, A. F et.al, Phillips, B.,	1	1	1	1	0	0	0	1	1	1	1	8
Satpute, K. et.al H., Bhandari	1	1	1	1	0	0	0	1	1	1	1	8

In the table numer three, we have presented the specifics of the studies included in our study.

Table 3: Specifics of the studies included in our study

Author Year Country	Patient	Duration	Therapy	International tests	Type of study	Results
1.Pamela Teys ⁶ et.al; Leanne Bisset 2012 Austria	25 Pat	1 week	Gr1. MWM mulligan concept combined with neurotaping. Gr2.Mulligan concept MWM.	PPT VAS ROM articular	RTC	Gr1 was superior to Gr.2 intervention in Post hoc ROM upgrade had value (p <0.001) for articular ROM. Meanwhile in the PPT test there were no significant differences between the two groups (p = 0.7) also in the VAS test (p = 0.7)
2.Burak Meneka, et.al; Devrim Tarakci et.al; dhe Z. Candan Algun 2019 Turkey	30 Patient	6 week	Gr.1 Mulligan concept Gr.2 with general methods of pain treatment.	DASH VAS ROM articular SF-36	RTC	Post hoc found that the results of VAS, shoulder ROM and DASH test in the Mulligan group were found to be better than in the second group (p <0.05). In terms of SF-36 there is no statistically significant difference between groups.
3.Jose A. Delgado et.al; Eva-Pradlo Robers 2015 Spain	42 Patient	2 week javè	Gr1. 21 Mulligan concept Gr.2. 21 SHAM therapy	NPRS ROM articular	RTC	Significant results of Gr.1 with respect to pain intensity during arm flexion, and during external arm rotation. Regarding the increase of abduction the values were the same for both groups (F = 4.247; P = .046)
4.Yanwu Wang et.al;Chongmin Wang ⁹ 2018 China	120 Patient	6 week	Gr1. N=40 acupuncture therapy Gr2. N=40 combination therapy Gr3. N=40 Mulligan concept	VAS UCLA ROM articular	RTC	All three groups had significant changes in UCLA rate and increased articular ROM. However, comparison of variables between groups with the Anova scale showed greater improvements of Gr2 receiving MWM treatment and electroacupuncture.
5.Aimie f. Kachingè et.al Beth Phillip 2018 Kaliforni	33 Patient	6 javè	Gr1 exercise therapy Gr2. exercise therapy and mobilizations Gr3. Exercise therapy and MWM Gr.4 Control group	VAS SPAD ROM articular	RTC	Significant difference of gr MWM in comparison was observed and other gr. Changing the ROM: Gr166.5 (28.1) MWM had the largest increase. SPAD improved in all groups but Gr.1 had the most significant changes with p = 0.000
6.Kiran H. Satpute et.al Prashant Bhandar 2015 Indj ¹⁰	44 patient	3 week	Gr1 concept mulligan MWM Gr2. warm-up treatment and exercises Gr.3 Control group	ROM SPAD VAS	RTC	The MWM group with exercises showed significantly greater improvements (P <05) than the set of exercises. ROM favoring a greater improvement in the MWM group.

4. Discussions

Studies found for this literature review showed that the Mulligan technique has a positive effect on the treatment of patients with subacromial conflict. Researchers Dabholkar Ajit et.al; Shetty Shika et.al determined in their study the effectiveness of the Mulligan concept in increasing sub-acromial space. They also showed that this concept brought significant improvements in reducing pain and increasing the stability of the scapular circle¹¹. Researchers Dawn P. Andreas and Kari B. Odland-Wolf determined the efficacy of using thoracic SNAGs in the treatment of SIAS. Based on the increase of internal and external shoulder rotation and shoulder flexion (ROM), as well as the reduction of pain, it was proved that the intervention of the treatment of thoracic vertebrae with the concept of mulligan helps and treats patients diagnosed with conflict syndrome¹². Researchers like Aimie F. Kachingè and Beth Phillips showed that the Mulligan concept movement mobilization technique brings significant changes in the treatment of subacromial conflict. They also studied that if exercise therapy is combined with this technique then reducing pain and increasing functionality will be faster and more effective¹³. Researchers Jing-lan Yang, Chein-wei Chang determined the effectiveness of the Mulligan concept MWM technique versus ERM. In their study it was observed that there were significant changes in arm flexion movement, scapulo-humeral rhythm and in external and internal rotation of the arm¹⁴. Researchers Robinetta A. Hudson and Russell T. Baker used the MWM technique and the Neuromuscular Reflex (RNS) technique in rehabilitating anterior scapular pain and in treating subluxation. These techniques provided immediate relief of all of the patient's pain and increased ROM since the first treatment. The results showed a pain resolution, an increase in range of motion (ROM) and improved scapular stability¹⁵. In the study of Kai-Yu Ho et.al; Ar-Tyan Hsu determined the effectiveness of the Mulligan

technique in increased glenohumeral abduction. The researchers also suggest that this technique plays an important role in altering the entire impaired kinematics of the gleno-humeral joint¹⁶. Researchers Gokhan Doner et.al; Zeynep Guven, determined the effectiveness of the Mulligan technique against muscular stretching in adhesive capsule during 3 months follow-up. The results revealed significant changes in articular ROM, pain, and scapular circle stability¹⁷. In the study of Cristina Lirio Romero et.al María Torres Lacomba it was found that the Mulligan technique is superior to the standard physiotherapy protocol in adult shoulder dysfunctions. Improvements in articular ROM and pain severity in favor of the MWM group were observed in this study¹⁸. Researchers Suzie Noten et.al; Mira Meeus appreciated the various manual techniques in increasing articular ROM and reducing shoulder pain. In this study the authors determined that the combination of the maitland technique in combination with the Mulligan mobilizations was most effective in rehabilitation¹⁹.

5. Conclusion

The Mulligan technique has a very positive effect in treating patients with sub-acromial conflict.

Based on the results of 6 studies reviewed in our literature review, we concluded that the Mulligan method is very effective in increasing arm articular ROM, reducing pain severity, and increasing rotator cuff muscle function.

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