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The role of dermato-functional physiotherapist in the healing process in burned patients: a literature review

Jeane Roberta de Melo^{1*}, Adja Kathiany Lins Tavares², Patrícia Pereira Cristovão³, Ana Clara Correia de Aguiar⁴, Paulo Rosemberg Rodrigues da Silva⁵, Sandra Maria Correia de Santana⁶, Samia Dayana Lemos de Lacerda⁷, Natália Fernanda Bezerra de Melo⁸, Bruna Rafaela Dornelas de Andrade Lima Monteiro⁹, Andresa Kelly de Oliveira Santana¹⁰, Ivina Magalhães de Andrada Melo¹¹, Ana Cecília Amorim de Souza¹²

1. Physiotherapy/UNIVISA

2 Physiotherapy/FAPE

3 Bachelor's degree in physiotherapy / UNIVISA

4. Bachelor psychology/UNIVISA

5 Nurse and Coordinator - SAMU- Umbuzeiro/PB - Emergency Nurse

6 Director of SS physiotherapy - Master in biomedical engineering - Specialist in urogynecology, proctology and obstetrics

7 PhD student in the graduate program in Therapeutic Innovations -UFPE -Professor and coordinator of the nursing course at UNIFACOL

8 Undergraduate Nursing Student / UNIVISA

9 PhD student of the Graduate Program in Therapeutic Innovation (UFPE). Professor of the Physiotherapy Course of UNIFACOL.

10 Physiotherapy - São Miguel University

11 Medical -FPS

12 Professor in Nursing and Physiotherapy – UNIVISA

E-mail addresses: Jeane Roberta de Melo (jmelo2266@gmail.com), Adja Kathiany Lins Tavares (adja_kathiany@hotmail.com), Patrícia Pereira Cristovão (ppcrisovao287@gmail.com), Ana Clara Correia de Aguiar (claraaguiar254@gmail.com), Paulo Rosemberg Rodrigues da Silva (paulorosemberg2007@hotmail.com), Sandra Maria Correia de Santana (ss.oliveira10@hotmail.com), Samia Dayana Lemos de Lacerda (samia.lacerda@ufpe.br), Natália Fernanda Bezerra de Melo (fernandaamelo93@gmail.com), Bruna Rafaela Dornelas de Andrade Lima Monteiro (brunadornelasmonteiro@gmail.com), Andresa Kelly de Oliveira Santana (andresakoliveira@gmail.com), Ivina Magalhães de Andrada Melo (Ivina_ferraz@hotmail.com), Ana Cecília Amorim de Souza (anacecilia.cge@gmail.com)

*Corresponding author

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Abstract: The aim of this research is to investigate what is in the literature about the role that the dermato-functional physiotherapist develops in the healing process in burned patients and what protocols are used. The collection was of scientific articles taken from electronic bases of scientific publications, and the following were identified: Scientific Electronic Library Online (SciELO), Latin American and Caribbean Literature on Health Sciences (LiLacs), PUBMED and Medline. Through the search in the databases resulted in the identification of 50 articles, being selected only 09 publications in this way, 41 articles were evaluated and excluded for not having theme according to the theme. Thus, it was possible to identify that physiotherapy

develops a very important role in the rehabilitation process and aesthetic procedures in patients who have suffered some burning and may provide a better quality of life and a significant improvement in burn healing.

Keywords: Physiotherapy. Dermato-functional. Burns

1. Introduction

The skin is the largest organ of the human body, is responsible for about 16% of body weight and has as main function isolated the internal structures of the external environment, and consists of three layers: epidermis, dermis and hypodermis or subcutaneous fabric. The outer layer of the skin is the epidermis, being avascular with thickness from 75 to 150 μm , being 0.4 to 0.6 mm thick in the palm sand of the hands and plant of the feet, having as main function, protection against external agents. Consisting of overlapping flattened epithelial cells that are arranged in; germinative or basal, spinous, granules, lucid and cornea (DOMANSKY; *et al.*, 2012).

The burn is an injury of organic tissues due to a trauma of thermal origin, ranging from a small bubble to severe forms, capable of triggering systemic responses proportional to extension and depth. They are injuries

that can lead to disfigurement, disability and even death.

There are several ways of classifying a burn injury, among them the one based on the depth of the damaged skin, which will determine the treatment and prognosis of the patient. These lesions are referred to as superficial (previously referred to as 1st degree), partial thickness (known as 2nd degree), or full thickness (referred to as 3rd degree).

The physiotherapeutic intervention plays a primarily preventive role when initiated early. Otherwise, the patient may develop sequelae, mainly due to prolonged immobilization or the remaining antalgic position. The earlier physical therapy is started, the better the results from this intervention (FERREIRA, 2003).

Active exercise is encouraged in all burned areas. All joints, even those of the unburned regions, must undergo active exercises of full amplitude. Assisted passive and active exercises should be initiated if the patient is unable to perform full range of motion with active exercises (KISNER And COLLEY, 2005).

Techniques of neuromuscular facilitation of relaxation contraction (PORTER, 2005) can be used with great efficacy.

Electrostimulation has been shown to be effective for tissue regeneration, microcurrent and laser (AsGa) are extremely effective resources for wound healing, and can therefore be used for tissue regeneration of wounds caused by first-degree lesions (BORGES, 2006). Ultrasound can be used in the outpatient phase, at a dosage of 1 to 2W/cm², continuous mode, aiming at lithic effects, acting in the modeling of collagen fibers underlying the scar injury (BORGES, 2006).

Infra-red is also a resource used for pain relief, increased joint mobility and repair of soft tissue lesions. The physiological effects already cataloged by the scholars of this

resource are: vasodilation, increased blood flow, increased leukocytosis, increased phagocytosis, increased metabolism, muscle relaxation and other structures, analgesia and healing acceleration (AGNE, 2008).

Compressive treatment has been used since the 1970s. It is standard for hypertrophic burn scars and first-line option in many burn centers. It is an effective method in the treatment and prevention of hypertrophic scars (FERREIRA & D'ASSUMPCÃO, 2006). A self-adherent elastic bandage can be used for the hands and toes. It can be used on the dressings before the wound recovers. It can be applied before a glove or as definitive in a baby's hand (O'SULLIVAN, 2004). In Borges' view (2010), compressive robes are part of the outpatient treatment of deep burns of 2^o. and 3rd. Degrees, in order to exert continuous pressure on healed and grafted areas, preventing scar hypertrophy. The physical therapist's performance should direct to prescribe, verify model and size, dress the patient for the first time, guiding him/her the best way to do so, guide hygiene aspects, observe stabilization of gains and plan high use of compressive clothing.

The aim of this research is to investigate what is in the literature about the role that the dermato functional physiotherapist develops in the healing process in burned patients and what protocols are used.

2. Methodology

This study retrospectively evaluated research of scientific articles that used the databases: International Literature on Health Sciences (Lilacs), Scientific Electronic Library Online (SciELO), PubMed and Medical Literature Analysis and Retrieval System Online (Medline). The research keywords were: Physiotherapy; Dermato functional; Burns, burns, burns. Finally, the articles were read to filter those that fit or not into the chosen items.

3. Results and Discussion

Added to the terms Dermato functional physiotherapy AND Burn patientes AND Burn healing ("Dermato functional Physiotherapy" "Burned patients" "Healing in burns"), With the operator Boolean. Four databases were used, SCIELO, LILACS, PUBMED and MEDLINE, in total, 12 published were obtained, among these, 7 studies were in English, 8 in Portuguese among esses, 3 were selected to make up the analysis and the proposed distribution para this work. Thus, 9 were evaluated and excluded because they did not present a theme addressed according to the proposed study.

Table 1. Themes of the studies "Dermato functional Physiotherapy", "Burned Patients", "Healing in burns"

"Dermato functional Physiotherapy", "Burned Patients", "Healing in burns".	N
Dermatofunctional Physiotherapy	1
Burned patients	1
Healing in burned	1
Total	3

Source: Prepared by the researcher based on the studies found

Added to the terms Burn patients AND Dermato functional physiotherapy AND Burn healing ("Burned patients " " "Dermato functional physiotherapy" " "Healing in burns"), With the operator Boolean. Four databases were used, SCIELO, LILACS, PUBMED and MEDLINE, in all, 21 published were obtained, among these, 10 studies were in English, 9 in Portuguese among, 3 were selected to make up the analysis and the proposed distribution para this study. Thus, 18 were evaluated and excluded because they did not present a theme addressed according to the proposed study.

Table 2 - Themes of the studies "Burned Patients", "Dermato functional Physiotherapy", "Healing in burns"

"Burned patients", "Dermatofunctional physiotherapy", "Healing in burns".	N
Burned patients	1
Dermatofunctional physiotherapy	1
Healing in burned	1
Total	3

Source: Prepared by the researcher based on the studies found

Added the terms Burn healing AND Burn patients AND Dermato functional physiotherapy ("Healing in burned" "Burned patients" "Dermato functional physiotherapy"), With the operator Boolean. Four databases were used, SCIELO, LILACS, PUBMED and MEDLINE, in total, 17 published were obtained, among these, 9 studies were in English, 6 in Portuguese among, 3 were selected to make up the analysis and the proposed distribution para this work. Thus, 14 were evaluated and excluded because they did not present a theme addressed according to the proposed study.

Table 3. Themes of the studies "Healing in burns", "Burned patients", "Dermato functional physiotherapy"

"Dermato functional Physiotherapy", "Burned Patients", "Healing in burns".	N
Healing in burned	1
Burned patients	1
Dermatofunctional physiotherapy	1
Total	3

Source: Prepared by the researcher based on the studies found

From this evaluation of the publications, the following articles were obtained for discussion:

Table 4. Selected Articles

N°	Origin	Article title	Authors	Year	Considerations/ thematic
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01	Biocours es Portal	Early performance of physiotherap y in burned patients.	Moraes, C. E.; Mejia, M.P.D.	2012	Most studies have addressed the use of aerobic physical exercise and endurance, proving that such approaches significantly reduce the loss of lean body mass as well as muscle strength so common in burn patients. Also, these resources contribute to the reduction of scar contractures, avoiding or at least minimizing the restriction in range of motion, reducing the need for functional release surgeries, besides improving cardiovascular capacity and respiratory variables by providing increased resistance of respiratory muscles.
02	Digital Magazin e. Buenos Aires	Physiotherap eutic procedures in burned patients: literature review	Agne, E.J. ; Antunes, B.D.	2012	Most studies have addressed the use of aerobic physical exercise and endurance, proving that such approaches significantly reduce the loss of lean body mass as well as muscle strength so common in burn patients. Also, these resources

4 Melo, J.R.; Tavares, A.K.L.; Cristovão, P.P.; Aguiar, A.C.C.; Silva, P.R.R.; Santana, S.M.C.; Lacerda, S.D.L.; Melo, N.F.B.; Monteiro, B.R.D.A.L.; Santana, A.K.O.; Melo, I.M.A.; Souza, A.C.A. *The role of dermato-functional physiotherapist in the healing process in burned patients: a literature review...*

					contribute to the reduction of scar contractures, avoiding or at least minimizing the restriction in range of motion, decrease the need for functional release surgeries, in addition to improving cardiovascular capacity and respiratory variables by providing increased resistance of respiratory muscles					Brazilian health.	
						04	Brazilian Journal of Burns	Physiotherapeutic evaluation of healing of burn injuries: literature review	Marques, G.M.C.; Dutra, R.L.; Tibola, J.	2015	Although there is a great variation of the lesion regarding the depth and origin of burns, location, age of the patient, among other clinical conditions, there is still a need to find protocols and tools that present standardization and reliability for an evaluation of reproducible healing and accurately.
03	Dom Alberto Health Magazine	The use of dermatofunctional physiotherapy in burned patients- Literature review	Prestes, B.R.	2013	Because it is a very recent area of activity, the scientific research carried out by professionals who work there is still scarce. However, this bibliographic survey allowed us to observe that there is a basis in the scientific literature to justify the choice of the various resources used in burned patients encompassed by this area of physiotherapy. There is a need to expand the number of scientific research, thus consolidating dermatofunctional physiotherapy as a relevant area in the context of						
						05	Brazilian Journal of Burns	Dermatofunctional physiotherapy in the treatment of burn victims	Gonçalves, C.A.; Guirro, O.C	2016	The performance of dermatofunctional physiotherapy, specifically in burn victims, has progressively increased, as has the number of professionals committed and interested in the practical application of new techniques and therapeutic resources. The number of related scientific studies has also increased ¹⁻³ . Finally, the goal of rehabilitation of the burned individual is to facilitate the return to the highest possible functional level,

					with independence and quality of life.
06	Uningá Magazine	Performance of dermatofunctional physiotherapy in the rehabilitation of burned patients: an integrative literature review.	Fernandes, S.I.M.	2019	Laser is a valuable alternative in the treatment of burns, ability to speed up the process of rapid and organized healing, potentiating the proliferation of reparative cells.
07	Open Juornal Systems	The burned patient: A panorama and therapeutic perspectives	Pechara, B. B.	2019	The specific treatment of the burn depends on the depth, extent of the lesions and the technical ability of the responsible physician, in addition to the non-pharmacological treatment with hypnosis and virtual reality techniques, being approached by a multidisciplinary team.
08	Journal research in physiotherapy	Use of LED in burn healing: systematic review of the literature	Araújo, S.J.M.; Martins, B.G.	2019	From the articles analyzed in this review, it was observed that LED light is beneficial for burn scar repair in animals and improves histological aspects in treated tissues. However, the number of articles related to the applicability

					of these resources for scar treatment in burn injuries is still limited and other studies should be conducted aiming at stronger scientific evidence to establish appropriate protocols and to prove the efficiency of this therapy to assist in the rehabilitation of burned patients.
09th	Perspective Magazine: Science and Health	Physiotherapist's performance in severely burned patients	Cardoso, K. É.; Silva, L.S.T.	2020	To achieve the goals proposed for the treatment, physiotherapy resources are used, such as: Positioning in bed, Use of orthotics, Kinesiotherapy, Massage, Respiratory Physiotherapy, Electrotherapy and Cryotherapy.

4. Conclusions

The present study showed how important physiotherapy has a role in the treatment in patients who suffered some type of burn regardless of the degree of injury. Through physiotherapy the patient will receive treatment so that his motor functions are reestablished performing exercises that aim to gain ROM and muscle strength and in view of the dermatofunctional specialty that exists within physiotherapy, the same power through the use of existing resources in this area, improve the appearance of the scar generated by the burn bringing better well-being to the patient. Therefore, physiotherapy plays a key role in returning a better quality of life to the patient and making sure that he can return his ADL's as soon as possible.

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