



Case report

## PHYSIOTHERAPY MANAGEMENT IN PATIENTS IN THE EARLY POSTOPERATIVE PERIOD IN THE ORTHOPAEDIC-TRAUMATOLOGICAL PRACTICE

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### ABSTRACT:

Fractures are a common trauma leading to serious functional disability and impaired quality of life. In the course of orthopedic practice, the main role of the multidisciplinary team is the rapid and reliable reconstruction of the anatomical integrity of the bone as a condition for ensuring rapid functional recovery, but the effect of psycho-emotional trauma on the rehabilitation process is often underestimated.

**Materials and methods.** In the literature review in the period 2009 - 2024 in the scientific databases of Scopus, Elsevier, PubMed and Google Scholar, we did not find protocols for rehabilitation in the early postoperative period in patients with fractures, according to their psycho-emotional attitude to the recovery from the trauma. For this reason, we developed an algorithm for physiotherapeutic management in such patients according to the rehabilitation potential and their psychological attitude regarding their recovery.

**Discussion:** It has been proven that the general rehabilitation protocols in the early postoperative period for trauma patients are rarely universally applicable, and referring them to the physiotherapy and rehabilitation departments, they do not always receive the optimal physical load there, according to their needs.

**Conclusion.** We believe that our proposed algorithm would be useful for clinical physiotherapy practice in patients with orthopedic injuries in the early postoperative period and would lead to better functional results and a higher quality of life. The effectiveness of the proposed algorithm should be investigated in future research.

**Keywords:** physiotherapy, early postoperative period, orthopedic trauma, stress syndrome

### INTRODUCTION

Orthopedic trauma is a sudden, life-changing event experienced by approximately 2.8 million people annually. It is associated with multiple fractures and sometimes even amputation in severe injuries [1]. Fractures are a significant and growing global public health problem, affecting one in two women and one in five men over 50 years of age [2]. The main care for these patients in orthopedics and traumatology clinics by surgeons and medical staff is stabilizing and reconstructing the anatomical structures disrupted in the trauma, with the focus being mainly on examining the physical status and often reflecting on the mental state of this life event remains unappreciated and not well understood [1, 3]. Orthopedic trauma not only leads to functional deficits but is also essential for the onset and development of post-traumatic psychological morbidity [4]. In some patients, after orthopedic trauma, their whole life is accompanied by anxiety and depression [5]. These conditions are often highly associated with increased disability, pain, and post-traumatic complications [6]. Changes in the psycho-emotional state directly affect the rehabilitation process, as depression reduces the patient's motivation to recover, and post-traumatic stress and fear of re-trauma prevent a quick return to activities of daily life and negatively affect the quality of life [1]. For this reason, both the physical and psychological needs of patients must be taken into account when targeting optimal recovery after orthopedic trauma [7].

Rehabilitation outcome and rehabilitation potential are two separate concepts that must be distinguished when considering the patient in terms of rehabilitation. The rehabilitation assessment is determined based on an examination of the patient's physical condition, psychological condition and socioeconomic status [8]. The patient's rehabilitation potential is determined based on a number of factors such as age, clinical diagnosis, concomitant diseases, harmful habits, psycho-emotional state, current state of health, etc. [9].

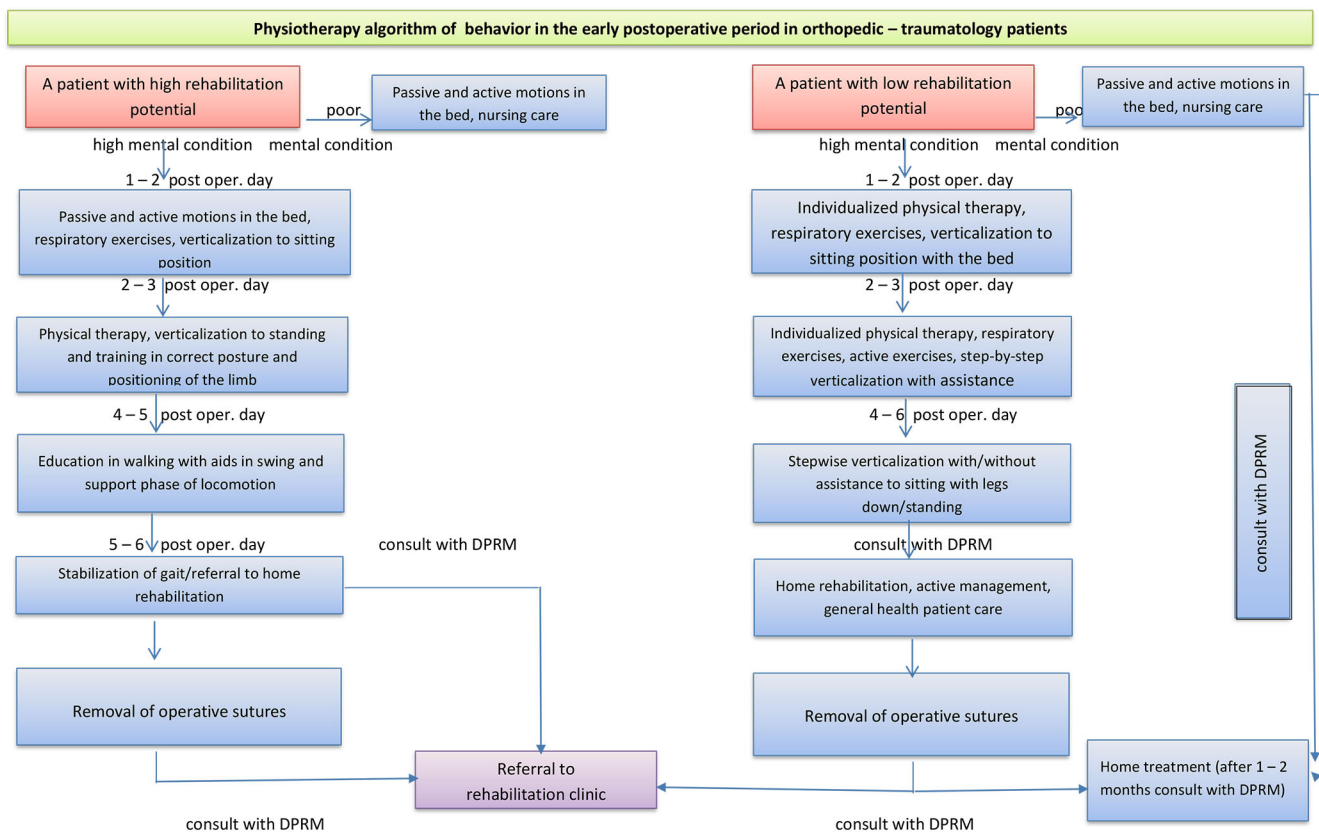
## MATERIALS AND METHODS:

A comprehensive review of the publications in the period 2009 - 2024 in the world scientific databases Scopus, PubMed, Elsevier, Google Scholar and others was made, and no information was found on specific guidelines for the physiotherapy approach in the early postoperative period in patients with orthopedic trauma, according to their psycho-emotional attitude and general rehabilitation potential. This gave rise to the need to develop an algorithm for physiotherapeutic behavior in patients in the early postoperative

period in clinics of orthopedics and traumatology.

It was prepared in accordance with the general protocols for physical therapy in the early postoperative period for patients in orthopedics and traumatology clinics, according to the leading clinical diagnosis, co-morbidity and the specific individual characteristics of each patient. It tracks the patient's rehabilitation path from the first post - the day of surgery to his discharge and referral to home treatment or to a department of physical and rehabilitation medicine.

**Fig. 1.** Physiotherapy algorithm of behavior in the early postoperative period in orthopedic – traumatology patients.



According to the rehabilitation potential of the patients and their current psychological state, a triage is made, according to which two main lines of physiotherapy behavior are followed for high or low rehabilitation potential.

In the case of a patient with a high rehabilitation potential, according to the current psycho-emotional state and the resulting assistance in carrying out rehabilitation actions, two types of approach are outlined:

- In the absence of a desire to work and the assistance of the physiotherapist, a program is implemented, including passive and active exercises in bed and nursing care until discharge from the clinic and referral to home treatment until the psycho-emotional attitude changes.
- If there is a desire and motivation for a quick re-

covery, active work with the patient begins immediately after the operative intervention at the opinion of the physiotherapist.

- 1 - 2 postoperative day - respiratory, passive, active exercises are performed in bed and verticalization to a sitting position is carried out;

- 3 - 4 postoperative day – individualized physical therapy, verticalization to standing and training in correct posture and positioning of the limb;

- 4 - 5 postoperative day – transition to education in walking with aids in swing and support phase of locomotion;

- 5 - 6 postoperative day - stabilization of gait/referral to home rehabilitation.

With an average statistical stay of 6 days in hospi-

tal conditions, patients are discharged, after which they undergo a consultation with a doctor of physical and rehabilitation medicine (DPRM) and, in his opinion, enter for rehabilitation after the removal of the operative sutures (on average the 12th postoperative day) or are referred for temporary home treatment, in which after a certain period of time they are again subject to consultation with the DPRM and a re-assessment of his rehabilitation potential and the stage of recovery.

In the case of a patient with a low rehabilitation potential, according to the current psycho-emotional state and the lack of motivation and desire for assistance in carrying out rehabilitation actions, two types of approaches are also outlined:

- In the absence of a desire to work and the assistance of the physiotherapist, a program is implemented, including passive and active exercises in bed and nursing care until discharge from the clinic and referral to home treatment until the change of psycho-emotional attitude and change of the rehabilitation potential.

- If there is a desire and motivation for recovery, the rehabilitation activities with the patient begin immediately after the operative intervention in the opinion of the physiotherapist and the current state of health.

- 1 – 2 postoperative day – Individualized physical therapy, respiratory exercises, verticalization to a sitting position with the bed is prepared;

- 2 – 3 postoperative day – Individualized physical therapy, respiratory exercises, active exercises, step-by-step verticalization with assistance;

- 4 – 6 postoperative day – Stepwise verticalization with/without assistance to sitting with legs down/standing;

- Home rehabilitation, active management, general health patient care.

Before discharge, after an average of the 6th postoperative day, patients are discharged, after which they undergo a consultation with a doctor of physical and rehabilitation medicine and are referred for temporary home treatment, in which, after a certain period of time, they are again subject to a consultation with the DPRM and a re-assessment is made of his rehabilitation potential and stage of recovery with the possibility of referral to a department of physical and rehabilitation medicine.

#### **DISCUSSION:**

In the preoperative selection of trauma patients, the surgeon is expected to assess, based on a number of factors, whether the operative intervention will lead to the maximum functional result, given the individual characteristics of the patient, his clinical status and lifestyle compared to conservative treatment. For the successful outcome of treatment, however, there is a body of evidence that the patient's psychological traits also influence or-

thopedic outcomes. In particular, psychological factors that influence adherence, rehabilitation efforts, and pain perception have a major role that reflects, among other things, complication rates, symptom and functional outcomes, and above all, patient satisfaction [10, 11].

Referral to the departments of physical and rehabilitation medicine at a time that is less than optimal for the patient's recovery could explain the result of the study conducted by Peiris C. et al. They found that elderly patients with lower extremity orthopedic diseases in inpatient rehabilitation are relatively inactive and do not meet current physical activity guidelines, which clearly means that strategies are needed to address this problem [12].

The primary goal of physical therapy is to address functional deficits following trauma, but this is sometimes difficult to achieve due to the psycho-emotional stress of the experience, which affects both short- and long-term recovery. Patients usually have post-traumatic stress syndrome, depression and anxiety, which are serious obstacles to functional recovery and quality of life [1]. It has been found that after an acute orthopedic injury, psycho-emotional changes are reported in nearly one-third of patients who suffer from depression, and more than one-quarter have post-traumatic stress disorder [13]. Given that a moderate to strong association between psychological factors and musculoskeletal impairments has been demonstrated, this should be considered in the routine care of patients recovering from orthopedic trauma [14].

Volkmer B. et al. conduct research with the aim of preparing and providing standardized protocols for the recovery of patients from the orthopedic - traumatological aspect in an early period. However, they face the conflict between the individualized and the protocol approach. It is this conflict that is the basis for serious differences in future clinical guidelines and physiotherapy interventions. They also conclude that there are additional factors explaining the differences that can be specified by the increased involvement of the multidisciplinary team [15].

A number of studies have demonstrated a direct relationship between patients' mental status and recovery from injury, with some orthopedic trauma patients experiencing long-term disability even after full clinical recovery. For a large proportion of patients, the degree of disability does not fully match the extent and severity of their injuries [16].

#### **CONCLUSION:**

Orthopedic injuries are a serious challenge faced by surgeon - physiotherapist - patient. Only good collaboration in this milestone would lead to optimal results and a return to the normal pre-injury lifestyle. Very often, in clinical practice, serious attention is paid to the constructive solution of the trauma, as well as to its functional recovery, but the psycho-emotional stress and attitudes of

the patient about the recovery process are seriously underestimated, which results in wrong rehabilitation management and leads to unsatisfactory functional results and impaired quality of life. We believe that our proposed algorithm would be useful for clinical physiotherapy prac-

tice in patients with orthopedic injuries in the early postoperative period and would lead to better functional results and a higher quality of life. The effectiveness of the proposed algorithm should be investigated in future research.

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