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Physiotherapy Treatment in Cases of Weber Type a Sinistra Fractures with Infrared Modalities, Exercise Theraphy and Transcutaneus Electrical Nerve Stimulation (TENS) at Rsud Dr. H. Soemarno Sostroatmodjo Tanjung Selor

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Abstract: A weber fracture is a fracture of the fibula bone and is accompanied by severe pain and is usually swelling. This is caused by injuries such as accidents or excessive pressure and must be treated consistenly to prevent long-term consequences of the fracture (B. Harvella. RG, et al, 2024). To determine the implementation of physiotherapy to reduce pain, increase muscle tone, reduce edema and increase the range of motion joint. Using infrared physiotherapy modalities, exercise therapy and Transcutaneus Electrical Nerve Stimulation (TENS). Form the results obtained during 6 therapies, the data obtained were a decrease in silent pain from T0 : 0 to T6 : 0, motion pain from T0:5 to T6 : 3+ and tenderness from T0 : 7 to T6 : 4+. Increased strength of thr dorsal flexor and plantar flexor muscles from T0 : 4 to T6 : 4+, invertor and evertor muscles strenght from T0 : 3 to T6 : 3+. Decreased edema from the tibial tuberosity axist point to distal 10 cm from T0 : 25.5cm to T6 : 30.5 cm, tibial tuberosity to distal 15 cm from T0 : 26 cm and tibial tuberosity to distal 20 cm from T0 : 22 cm to T6 : 23 cm. And increased actived joint range of motion from T0 : S = $26^0 – 0^0 – 16^0$, F = 30^0 - $0^0 – 10^0$ to T6 : S = $27^0 – 0^0 – 17^0$, F = $31^0 – 0^0 – 11^0$. And passive range of motion of T0 : S = $27^0 – 0^0 – 17^0$, F = $31^0 – 0^0 – 13^0$ to T6:S = $28^0 – 0^0$ - 18^0 , F = $32^0 – 0^0$ - 18^0

Keyword : Weber type A fracture, Infrared, Exercise therapy and Transcutaneus Electrical Nerve Stimulation (TENS)

INTRODUCTION

In daily life, human activities and activities involve high mobility. This nati=urally makes it impossible to separate ourselves from the musculoskeletal system, especially bones, which are the primary means of movements. Bones from the supporting and protective framework of the body, and the attachment of muscles to move the body's skeleton. (Ardiansa, D. P., 2022).

Extremitly fractures, particularly those of the lower extremities, are one of the most common musculoskeletal traumas. In Indonesia, according to the 2019 Basic Helath Research

report from the Health Research report from the Health Development Agency and the ministry of helath, lower extremities experiencing the highest incidence of injury problem, with the lower extremities experiencing the highest incidensy of injury, at around 67%, and scarring affecting approximately 9.2%. Approximately 31.4% of these injuries are traffic – related (Wirayuni & Arista, 2021).

Ankle fractures are the most common type of lower extremity fracture worldwide. Ankle fractures are claimed to affect 70 – 185 patients per 100.000 people each years. The prevalence was found to be 57 per 100.000 in 1970 and is anticipated to increase to nearly 270 per 100.000 by 2030. Women have a higher incidence (0,3% per year) than men, and the incidence increase with age by 0.1% per year (Albaker, 2021).

Injuries from accidents generally accur in the musculoskeletal system, including tendons, muscle, ligaments, skin and bones. In 2011 – 2012, 5.6 million people died and 1.3 million people suffered fractures due to traffic accidents (Andri et al.,2020). A fractures is a complete or incomplete disruption of the continuity of bone structure. A fracture accurs when a bone is subjected to geater stress then it can absorb (Wijayanti et al., 2021). Fractures are often use caused by trauma, which involves excessive pressure on the bone, either direct or indirect. Complications resulting fraom fractures include bleeding, internal organ injury, wound infection, and embolism.

Ssa weber fracture is a fracture of the fibula bone and is accompanied by severe pain and usually swelling. It is caused by an injury such as accident or excessive force anmd must be treated consistenly to prevent long-term consequences of fractures (B. Harvelle.RG et al., 2024).

The ankle is one of the most congruent joints due to its anatomical configuration, being one of the most stable joints in the lower extremity. It is through this joint that flexion and extension of the foot are performed. This joint is formed by the distal epiphyses of the fibula, as well as the upper articular portion of the talus, and is a hinge-type synovial joint. Fractures at this location have been classified in various ways, depending on the number of malleoli affected, stability, or the mechanism of production. Loss of bone continuity may or may not be accompanied by joint-ligament injuries (B. Harvelle RG, et al., 2024). This condition is usually managed without immobilization and with a delay of full weight bearing after surgery for six to eight weeks to achieve complete bone consolidation, some authors consider placement of a device for ankle mobilization, which is thougt to protect osteosynthesis (B. Harvella RG, et al., 2024). Some of stated that this prolonged management puts patients at risk of loss of reduction, wound complications, and Charcot arthrophaty, especially in patients with diabetes mellitus. Currently, immobilization is thought to carry more negative locoregional events, as well as decreased quality of life, risk of surgical site infection, and wound dehiscence (B.Harvella.RG et al, 2024).

The World Health Organization (WHO) recorded that in 2011-2012, 5.6 million people died and 1.3 million people suffered fractures due to traffic accidents. A fracture is a condition where bone integrity is compromised. The most common cause of fractures is accidents, whether at work or in traffic accidents.

According to the Indonesian Ministry of Health (2011), of the many fracture cases in Indonesia, lower extremity fractures due to accidents have the highest prevalence. 19,629 people suffered femur fractures, 14,027 people suffered cruris fractures, 3,775 people suffered tibia fractures, and 970 people suffered fibula fractures. Although the fibula plays a minimal role in lower extremity movement, a fibula fracture can still lead to functional impairment of the leg and foot. Given the high prevalence of lower extremity fractures, the author was motivated to determine the extent of the benefits of physiotherapy in lower extremity fractures, particularly fibula fractures, which are the least common among lower extremity fractures. Therefore, they are rarely encountered in the field.

The author took the title "Physiotherapy Treatment in Cases of Weber Type a Sinistra Fractures with Infrared Modalities, Exercise Theraphy and Transcutaneus Electrical Nerve Stimulation (TENS) at Rsud Dr. H. Soemarno Sostroatmodjo Tanjung Selor"

METHOD

A. Thype of writing

1. Physiotheraphy Intervention Technology

Modalities used in cases of left Weber type A fractures include infrared, exercise therapy, and TENS. Infrared is a physiotherapy device that uses infrared light to treat patients. This therapy lamp produces a therapeutic effect in the form of warmth and comfort when shone on the body. This comforting effect is typically used to treat conditions such as low back pain, knee pain, and stiffness. It can also be used to relax stiff muscles in other joints. These lamps come in various wattages, ranging from 60-1,000 watts to 40,000 watts (Devia.VA, 2022).

The exercise therapy provided, namely ankle pumping, is a form of physical exercise used to train the muscles in the calves and ankles. The following are the indications and management of ankle pumping (Devia.P.W, 2022). Then, active resistance is an exercise with minimal and maximal load additions that can increase muscle strength. It is part of active exercise where static or dynamic muscle contraction occurs with the application of external resistance, with the aim of increasing muscle strength and increasing muscle endurance. External resistance can be manual or mechanical. Manual resistance is resistance. Where this exercise will increase the recruitment of motor units, motor units will increasingly involve the working muscle components. This can be done by gradually increasing the load or resistance given with a decrease in the frequency of repetitions.

Free active movement is a movement performed using the body's muscle strength without assistance, resulting from contractions against gravity. The goal of free active movement is to maintain muscle elasticity, stimulate tissue and joint integrity, improve blood circulation, and improve motor function and coordination (Atiqah and Andung, 2022).

TENS akan menghasilkan efek analgesia dengan jalan mengaktivasi serabut A beta yang akan menginhibisi *neuron nonioseptif* di *cornu dorsalis medula spinalis.* Teori ini mengacu pada teori gerbang *control (Gate Control Theory)* bahwa gerbang terdiri dari sel internunsia yang bersifat *inhibisi* yang dikenal sebagai substansia gelatinosa dan yang terletak di *cornu posterior* dan sel T yang merelai informasi dari pusat yang lebih tinggi. Impuls dari serabut *aferen nosiseptor* sehingga nyeri berkurang. (Devia.P.W, 2022).

2. Description Of The Problem

Based on the above background, the problem formulation that can be taken is how to manage physiotherapy with Infrared modalities, exercise therapy and Transcutaneous Electrical Nerve Stimulation (TENS) in cases of Weber type A sinsitra fractures? (Anisa.IV, 2021)

B. Population and Sample

1. Pain Measurement with Visual Analogue Scale (VAS)

This examination is related to sensory functions that are often encountered in physiotherapy services, namely measuring the degree of pain in patients. The following is obtained.

Tabel 1. pain measurement with *Visual Analogue Scale* VAS

VAS	Sinistra
Silent pain	0
Motion Pain	5
Tenderness	7

(Personal documents 2025)

From the results of the examination above, the results obtained were that silent pain was 0, pressure pain was 5 and pressure pain was 7.

2. Measuring muscle strength with Manual Muscle Testing (MMT)
Measurement of muscle strength produced the following results.

Tabel 2. Measuring muscle strength with *manual muscel testing*

Right	Muscles Group	Left
5	*Dorsi fleksi*	4
5	*Plantar fleksi*	4
5	*Inversi*	3
5	*Eversi*	3

(Personal documents 2025)

3. Anthropometric Measurements using Midline
Anthropometric measurements using midline obtained the following results.

Tabel 3. midline measurement on the leg

Right	Benchmark	Left
30,5 cm	10 cm from tuberositas tibia	30 cm
28 cm	15 cm from tuberositas tibia	25,5 cm
23 cm	20 cm from tuberositas tibia	22 cm

4. Measuring the Range of Joint Motion using a Goneometer
Joint measurements with a goniometer yielded the following results.

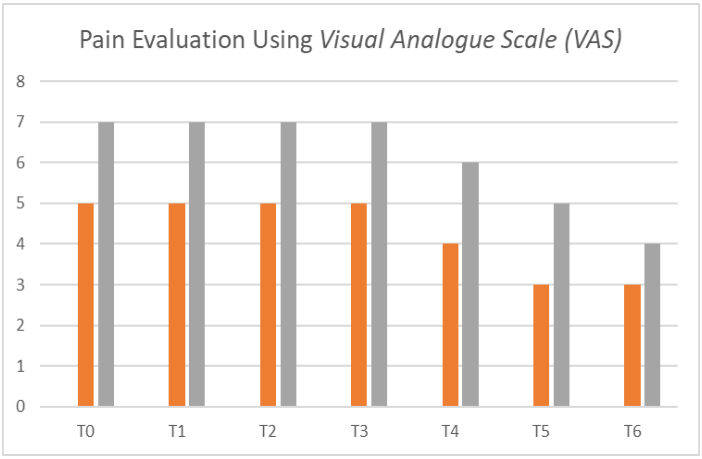
Table 4. Measurement of active joint range of motion

Right	Movement	Left
S = $30^0 – 0^0 – 20^0$	*dorsi fleksi – Plantar fleksi*	S = $26^0 – 0^0$ - 16^0
F = $35^0 – 0^0 – 25^0$	*Eversi – Inversi*	F = $30^0 – 0 – 10^0$

(personal document, 2025)

RESULT AND DISCUSSION

1. Pain Evaluation Using Visual Analysis Scale (VAS)
Based on the graph above, it can be concluded that pain measured using the VAS is decreasing or improving. The scores for pain on rest (T0: 0 to T6: 0), pain on movement (T0: 5 to T6: 3+), and pain on pressure (T0: 7 to T6: 4+) are decreasing.



Keterangan:

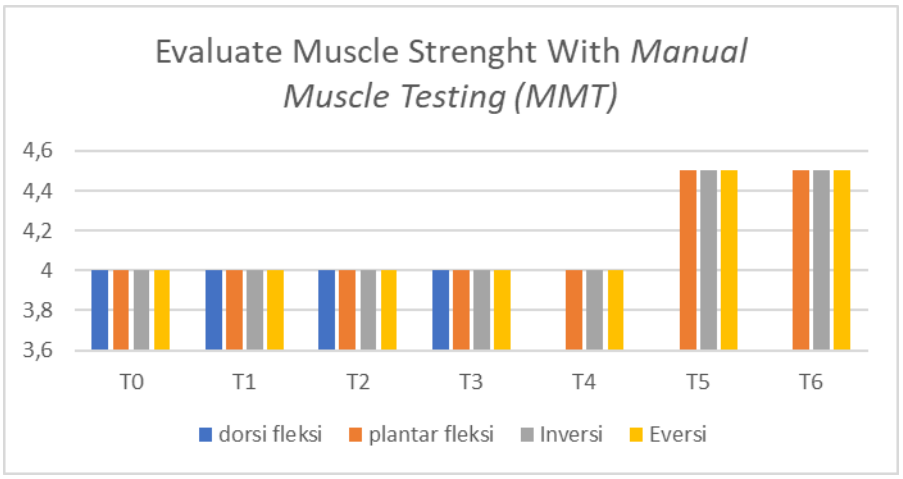
: Silent Pain

: Motion Pain

: Tenderness

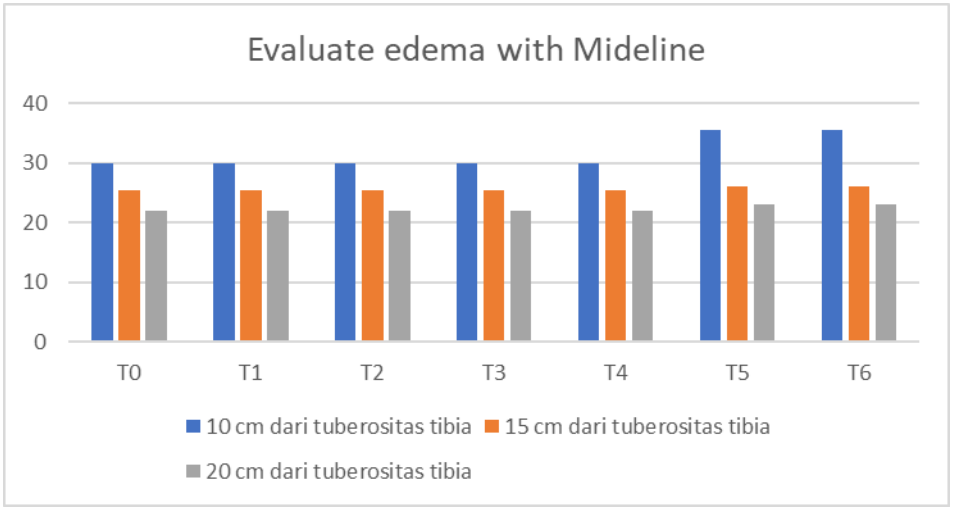
2. Evaluate muscle strength with Manual Muscle Testing (MMT)

Based on the graph above, it can be concluded that muscle strength as measured by MMT is increasing or improving. The strength values for the dorsal flexor and plantar flexor muscles (T0: 4 to T6: 4+), while the strength values for the invertor and evertor muscles (T0: 3 to T6: 3+) are decreasing.



3. Evaluate edema using Mideline

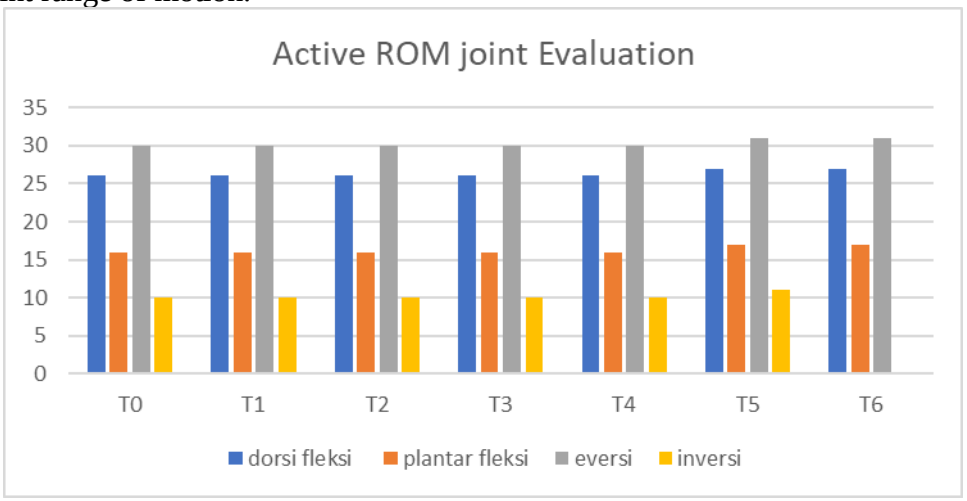
Based on the graph above, it can be concluded that anthropometric measurements with midline have decreased and the condition is getting better. The anthropometric value of the tibial tuberosity to the distal is 10 cm (T0: 30 cm to T6: 30.5 cm), the tibial tuberosity to the distal is 15 cm (T0: 25.5 cm to T6: 26 cm) and the tibial tuberosity to the distal is 20 cm (T0: 22 cm to T6: 23 cm).



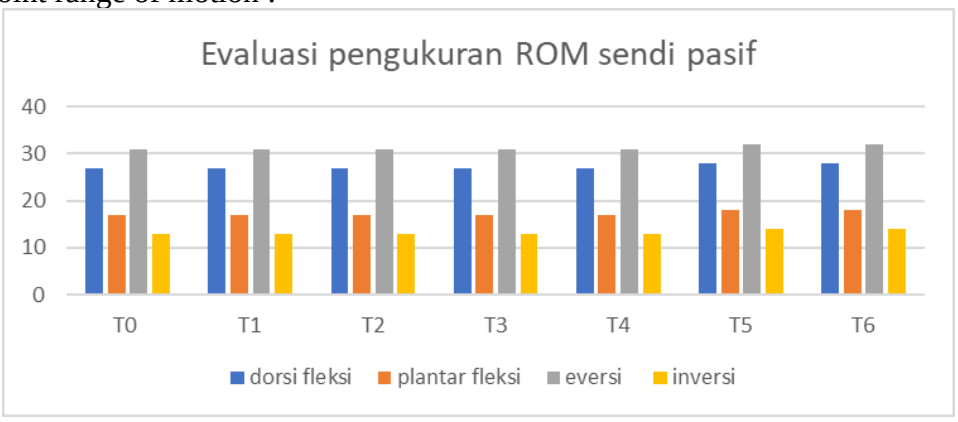
4. Evaluation of joint range of motion using a Goneometer

Based on the graph above, it can be concluded that the range of motion measured with a goniometer has significantly improved. The active ankle joint range of motion (T0: S = 300 – 00 - 300 to T6:), and the passive joint range of motion (T0: 350 – 00 – 350 to T6: 320 – 00 - 180) are:

Active joint range of motion:



Passive joint range of motion :



CONCLUSION

The author examined a 31-year-old patient, Mrs. Ria Widya Ningrum, diagnosed with a left Weber type A fracture. The problems she faced included edema, reduced range of motion (GMF), muscle spasms, joint stiffness, and muscle shortening. She also experienced decreased muscle strength and pain in her lower leg.

Based on these issues, the patient underwent six sessions of physiotherapy using infrared, exercise therapy, and transcutaneous electrical nerve stimulation (TENS). The results showed reduced edema in the left ankle, decreased pain in the left leg, increased left ankle muscle strength, and improved functional activity.

Based on the discussion above, it can be concluded that infrared therapy, exercise therapy, and transcutaneous electrical nerve stimulation (TENS) can have a positive impact on the patient's recovery. However, longer therapy sessions are required, and the patient must be disciplined, diligent, and highly motivated to follow the therapist's instructions at home.

Sugestion

The author hopes that the results of this final assignment will be beneficial and useful in providing physiotherapy services in similar situations "SINISTRA TYPE A WEBER FRACTURE". In addition, the author realizes that there are still many shortcomings in scientific papers, namely incomplete data acquisition due to difficulties in finding patients, errors in writing scientific papers, these shortcomings must be corrected and perfected in the future. Therefore, suggestions and criticisms are something that is constructive and always expected by the author for the common good to be better.

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