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EFFICACY OF DIADYNAMIC CURRENTS AS AN ADJUNT TO EXERCISE TO MANAGE SYMPTOMS OF KNEE OSTEOARTHRITIS IN ADULTS: A RANDOMISED CLINICAL TRIAL

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ABSTRACT

Objective: To investigate the effect of diadynamic currents administered prior to exercises on pain and disability in patients with osteoarthritis of the knee.

Design: A randomised controlled trial.

Setting: Special Rehabilitation Services in Taboão da Serra.

Subjects: Patients with bilateral knee osteoarthritis.

Intervention: Participants were randomly allocated to a Group I (diadynamic currents and exercises; n=30, 60 knees) and Group II (exercises alone; n=30, 60 knees) were treated 3 times a week for 8 weeks.

Main outcome measures: The primary outcome measure was the change in knee pain evaluated by visual analogue scale and disability Index Score (Lequesne), while secondary outcomes included change in mobility (Timed Up and Go test), range of motion (goniometer), muscle strength (dynamometer), a composite score for pain and disability (Western Ontario and McMaster Universities Osteoarthritis questionnaire), and a drug diary to measure consumption of rescue pain medication (paracetamol). All measurements were collected at baseline, 8 weeks, and 6 months from baseline (follow up).

Results: Altogether 60 patients, mean age of 63.40 (8.20) years. Between-group differences in the follow up (8 weeks and 6 months) were observed for the variable pain at rest, pain during activities of daily living and disability. The evident improvement observed in the Group I was maintained for the three variables, reaching the larger effect in six months after treatment, being for pain at rest, an estimated mean difference of -3.08 points (95% confidence interval -4.1;-2.02), $p<0.01$ with an effect size of 1.4, pain during activities of daily living an estimated mean difference of -2.40 points (95% confidence interval -3.3;-1.4), $p<0.01$ with an effect size of 1.24, and disability an estimated mean difference of -4.08 points (95% confidence interval -5.8;-2.2), $p<0.01$ with an effect size of 1.1.

Conclusion: Patients with symptomatic knee osteoarthritis receiving eight-weeks of treatment with Diadynamic currents associate with a program of exercises had significantly greater improvements than those receiving exercises alone. Beneficial effects were seen in pain and disability and were sustained for six months.

Keywords: Knee osteoarthritis; Pain; Electric Stimulation Therapy, Exercise Therapy.

INTRODUCTION

Osteoarthritis represents failed repair of joint damage resulting from stresses initiated by any joint or periarticular tissue abnormality. The rate of progression varies among persons and within a knee over time. The symptoms and signs of knee osteoarthritis include pain, stiffness, reduced joint motion, and muscle weakness. Long-term consequences can include reduced physical activity, deconditioning, impaired sleep, fatigue, depression, and disability.[1] As disease advances, occur to pain sensitization (abnormal responsiveness from changes in nociceptive processing in the peripheral or central nervous system), adaptation to chronic pain, or reduction in activity to avoid pain.[2]

This reduction in activity to avoid pain (kinesiophobia) to evade the onset of pain, especially in the acute phase, limiting their compliance with effective rehabilitation strategies such as regular exercises. There is high-quality evidence demonstrating the effectiveness of education and exercise to improve function in individuals with knee osteoarthritis.[3,4]

A systematic review of randomized trials of therapeutic exercise in patients with knee osteoarthritis indicated that exercise can significantly reduce pain, improve physical function and quality of life.[5] Furthermore, exercise training may improve cardiorespiratory function, increase muscle strength, stabilize posture, and ameliorate psychological health.[6] Thus, exercise training is an effective complementary therapy and plays an important role in the treatment for patients with knee osteoarthritis. However, there are few review articles on exercise training for knee osteoarthritis,[7] and lack the exploration of their mechanisms.

Considering the benefits of an integrated rehabilitative approach for patients with knee osteoarthritis, it is believed that the application of an analgesic resource before the exercises can favor a better execution of the same.[8-12]

Transcutaneous electrical nerve stimulation, interferential current and Diadynamic currents are some of the electrical agents used in the treatment of musculoskeletal pain conditions.[13] Transcutaneous electrical nerve stimulation is an analgesic current which is commonly used in pain clinics or at home by patients themselves. Diadynamic currents are low-frequency monophasic sinusoidal pulsed currents, up to 100 Hz. It has been reported that Diadynamic currents could have beneficial effects on the reduction of pain, due to muscle fiber stimulation, pain masking, vasodilatation, and hyperemia. Short periods, long periods, fixed diphase, fixed monophase, and syncopal rhythms are different types of Diadynamic utilization.[14,15]

Diadynamic is considered to have a compound analgesic mechanism with the gate control system theory as its main explanation. It is presumed that specific dynamics and analgesic effects include physiological processes in tissues with an influence on sensory and motor nerves. Another theory explaining analgesic mechanism of Diadynamic current states that this kind of electrical stimulation can generate an increase in the amount of endorphins, polypeptides responsible for pain-relief.[15] Both dynamogenic and inhibitory action of Diadynamic are used in treatment of various ailments. As the number of studies investigating Diadynamic is quite low, it is suggested that the evidence of its effectiveness remains scientifically weak. A single treatment session usually does not take longer than 12 minutes.[13,16] This is believed to be one of the greatest advantages of applying current.

Although the analgesic impact of Transcutaneous electrical nerve stimulation therapy is well known, Diadynamic current therapies have not been extensively studied in knee osteoarthritis. Therefore, the aim of the present study was to investigate the medium-term effects of Diadynamic currents combined with exercise on pain and disability in patients with osteoarthritis of the knee.

METHODS

This randomized controlled trial was registered in the Brazilian Clinical Trials Register (CT01306435) and approved by the local Ethics Research Committee (protocol n° 23475614.3.0000.5512). The study was conducted according to the CONSORT recommendations for non-pharmacological trials.[17] and data collected from January 2017 to December 2019.

Participants were patient volunteers who attended the Special Rehabilitation Services in Taboão da Serra-SP and had been diagnosed with knee osteoarthritis by an independent rehabilitation specialist. Participants fulfilled the following inclusion criteria: (1) aged 50 and 75; (2) symptomatic knee osteoarthritis for at least three months; (3) visual analogue scale score above 3 out of 10 (0=no pain, 10=worst pain imaginable)[18] and (4) grades 2–4 according to Kellgren–Lawrence.[19] The exclusion criteria were as follows: cancer, diabetes, symptomatic hip osteoarthritis, or used antidepressants, anti-inflammatory medications or anxiolytics during 6 months prior to enrollment.

Patients who had already been evaluated by an orthopedic doctor, had x-ray examinations, received a medical diagnosis of knee osteoarthritis and were awaiting physiotherapeutic care at the Taboão da Serra Rehabilitation Service were referred for the study. All the participants provided written informed consent prior to participating in the study. Basic demographic information, including medical history and physical examination results, was provided by an investigator not involved in the study. Patients who met our inclusion criteria were randomly divided into Group I (diadynamic currents and exercises; n=30, 60 knees) and Group II (exercises alone; n=30, 60 knees). We used a computer-generated random sequence block of four without stratification for the randomization process. The concealment was performed by placing the treatment assignment into sealed envelopes until the initiation of intervention.

Anthropometric and demographic data, the duration of knee pain, the use of pain relief medications, the knee range of motion, and a variety of patient-reported outcomes were collected at baseline (before randomization), 8 weeks from baseline and 6 months from baseline (follow up) by the same blinded assessor.

The primary outcomes were pain intensity measured by the visual analogic scale with a minimal clinically important change set at two points[18] and disability measured using the Lequesne questionnaire,[20] which consists of 11 questions about pain, discomfort, and function. Scores range from 0 to 24 (from ‘no’ to ‘extremely severe’ dysfunction).

Secondary outcomes included medication intake (Paracetamol) for relief of knee pain, mobility and balance, range of motion, muscular strength, and activity. Mobility and balance were evaluated by the Timed Up and Go test.[21] The Timed Up and Go test, a measure of functional mobility, quantifies in seconds the time that the individual needs to stand up from a chair, walk 3m, turn back toward the chair and sit down again. Range of motion of the knees was measured with a universal goniometer according to the methods described by Marques.[22] Muscular strength was estimated at maximal isometric force for the quadriceps, using a portable dynamometer (Lafayette, USA). Under stabilized conditions, patients, sitting with knees flexed at 60 (measured by a goniometer),[23] were asked to extend the legs as far as they could. Three attempts were conducted, and the mean value was obtained. Muscular strength was estimated at maximal isometric force for the quadriceps, using a portable dynamometer. Under stabilized conditions, patients, sitting with knees flexed at 10, 60 and 90 degrees (measured by a goniometer),[23] were asked to extend the legs as far as they could. The mean value of three attempts was calculated. Physical activity was measured using the Western Ontario and McMaster Universities Osteoarthritis questionnaire,[24] which is self-administered and measures pain, stiff joints, and physical activity. Increased scores suggest decreased activity.

All participants had osteoarthritis of both knees, and therefore both knees were treated with the allocated treatment.

Following initial assessment, participants received Diadynamic currents prior to exercises (Group I) or only exercises (Group II) three times a week for 8 weeks.

The treatment with Diadynamics was performed with the use of a Stymat S-210 apparatus. Stationary plate electrodes measuring 4 × 9 cm were put in medial and lateral side of the knee. The duration of the treatment amounted to 8 minutes in each side and was a sequence of different diadynamic currents: diphase current 4 minutes and long period 4 minutes. The intensity depended on the patient's individual reactions and on average amounted to 15 mA. The duration of the treatment was established conforming to the methodology of Bernard's current. Due to secondary inhibition, the maximum duration was 10 minutes.

The exercise intervention was administered as three, 45 minutes sessions per week for 8 weeks.[8-9] Each session consisted of:

- 10 minutes warming-up (treadmill, ergometer bike or rowing machine).
- 30 minutes 2–3 sets with Phase-1, Phase-2 and Phase-3.
- 5 minutes stretching (hamstrings, quadriceps, adductors, and gastrocmenius).

Insert Table 1

Participants were instructed not to use analgesic medications except paracetamol (maximum of 500 mg/day) or non-steroid anti-inflammatory drugs during the study, and not to change their regular physical exercise and activities during the study.

Assuming that participants would receive diadynamic currents prior to exercises (group I) or only exercises (group II) three times a week for 8 weeks, and the primary outcomes would be pain intensity measured by the visual analogue scale and disability measured using the Lequesne questionnaire (quantitative variables), we estimated the sample size considering a two independent means design (difference between two independent means, two independent groups). The sample size calculation was performed considering a difference between two independent means delineation (two independent groups). We hypothesized an effect size of Cohen's D = 0.8. At the value of $\alpha = 0.05$ and the power = 0.8, the sample size was calculated as 52 using the G*Power software (version 3.1.9.7). Considering potential attrition, we determined the target sample size to be 60.[8,9]

The Shapiro-Wilk test was used to test normality of continuous variables. The age, weight, height and body mass index of volunteers between groups were compared using Student's t-test for independent samples. To investigate the effect of the treatment on the pre and post evaluation, as well as the interaction of this effect between the groups, the General Linear Models with mixed design (evaluations time x groups) were applied. To analyze the effects of the interactions, Tukey's Post Hoc tests. Receiver operating characteristic curve analysis was used to compare and evaluate the accuracy of discrimination thresholds of pain during activity, pain at rest and disability scales at 8 weeks and 6 months. Sensitivity and specificity of each scale was made according to the best Youden's index. All analyzes were performed using the statistical program R version

3.1.3 using the R Commander graphical interface or Statistical Package for the Social Sciences® (SPSS IBM Corp., Armonk, US) version 21. All analysis were performed considering an alpha error of 5%.

RESULTS

Patients

In total, 69 subjects were considered for inclusion in the study. Of these 69, 9 were excluded because they did not meet the inclusion criteria or declined to participate. The remaining group of participants were randomly allocated to the Group I or the Group II. Sixty participants (120 knees) completed the trial *per protocol*. Thus, the *per protocol* analysis involved 60 participants (30 subjects in each group).

Insert figure 1

The participant's characteristics are described in Table 2.

Insert Table 2

Primary outcomes

Between-group differences in the follow up (8 weeks and 6 months) were observed for the variable pain at rest, pain during activities of daily living and disability. The evident improvement observed in the Group I was maintained for the three variables, reaching the larger effect in six months after treatment, being for pain at rest, an estimated mean difference of -3.08 points (95% confidence interval -4.1;-2.02), $p<0.01$ with an effect size of 1.40, pain during activities of daily living an estimated mean difference of -2.40 points (95% confidence interval -3.3;-1.4), $p<0.01$ with an effect size of 1.24, and disability an estimated mean difference of -4.08 points (95% confidence interval -5.8;-2.2), $p<0.01$ with an effect size of 1.03 (Table 2).

Insert Table 3

Secondary outcomes

The Group I presented a greater reduction in the use of medication (paracetamol) compared to the Group II group after 8 weeks, where the number of days of analgesic use medication for knee pain relief was significantly reduced ($p<0.01$).

Table 4 shows that the Group I also presented higher values in all subscales of the activity compared to the Group II ($p<0.01$), in muscular strength of quadriceps with knees flexed 90 degrees compared to the Group II, with an effect size that increased ranging from 0.49 at the baseline 0.68 at 6 months. Significant statistical differences were also observed in mobility and range of motion in 8 weeks follow-up staying up to 6 months ($p<0.01$).

Insert Table 4

Receiver operating characteristic curve analyses were performed with the objective of evaluating the impact of treatment with diadynamic current associated with exercise for the sensitivity and specificity of three different measures (pain during activity, pain at rest and disability). Sixty individuals participated, 30 in the group treated with diadynamic current and exercise (group I) and 30 in the group treated with exercise alone (group II). After 8 weeks, receiver operating characteristic curve analysis demonstrated significant accuracy for ‘pain during activity’ (area under the curve: 0.79, 95% confidence interval: [0.68;0.90], $p < 0.01$), ‘pain at rest’ (area under the curve: 0.75, 95% confidence interval: [0.63;0.88], $p < 0.01$) and ‘disability’ (area under the curve: 0.81, 95% confidence interval: [0.70;0.92], $p < 0.01$). In other words, if patients were randomly selected, at least 75% of individuals in group 2 would have higher scores than individuals in group 1, which is an acceptable level of discrimination according to Hosmer et al. [25] The sensitivity and specificity of each scale was 0.70 and 0.80, respectively, for the cutoff point of 5 on ‘pain during activity’ scale; 0.67 and 0.77, respectively, for the cutoff point of 2 on ‘pain at rest’ scale; 0.80 and 0.70, respectively, for the cutoff point of 6 on ‘disability’ scale. After 6 months, receiver operating characteristic curve analysis also showed significant accuracy for ‘pain during activity’ (area under the curve:: 0.802, 95% confidence interval: [0.692;0.913], $p < 0.001$), ‘pain at rest’ (area under the curve:: 0.83, 95% confidence interval: [0.73;0.93], $p < 0.001$) and ‘disability’ (area under the curve:: 0.75, 95% confidence interval: [0.64;0.87], $p < 0.001$). The sensitivity and specificity of each scale was 0.70 and 0.73, respectively, for the cutoff point of 6 on ‘pain during activity’ scale; 0.70 and 0.87, respectively, for the cutoff point of 4 on ‘pain at rest’ scale; 0.73 and 0.60, respectively, for the cutoff point of 7 on ‘disability’ scale.

Insert figure 2

DISCUSSION

The administration of electric currents across the intact surface of the skin to alleviate pain and improve function and quality of life associated with musculoskeletal conditions is becoming increasingly popular.[26] The efficacy of diadynamic currents combined with an exercise program on pain and disability in patients with knee osteoarthritis was assessed in this study. The addition of diadynamic treatment to an exercise program three times a week for 8 weeks proved to be more effective in improving pain and disability when compared to the group that only performed exercises alone during the same period.

Some people report the intensity of polarized diadynamic current treatment to be painful and therefore it is possible that endorphins released in response to this counter-irritation may be contributing to reductions in knee pain. [27,28] Can et al,[29] found that there were no statistically significant differences between transcutaneous electrical stimulation and diadynamic current in relief of pain, knee function or activity level in patients with patellofemoral syndrome. Can et al, argued that data was suggestive that diadynamic current may be marginally better than Transcutaneous electrical nerve stimulation in pain modulation because of the counter-irritation effects produced during diadynamic current. The benefit of diadynamic current found in the present study include reduction of symptoms and improvement of the execution of the movements.

It has been suggested that strength gains in patients with knee osteoarthritis are not significant unless they are accompanied by an increase in function. [30,31] In the present study, a greater gain in muscle strength and improvement in physical activity was found in the group that performed exercises associated with diadynamic currents and this gain was maintained up to 6 months of follow-up.

Rafjur et al.[32] found that selected electrical therapies (interferential current, TENS and high voltage) appear to be effective in treating chronic low back pain. The diadynamic currents appear to be less beneficial for degenerative proliferative disease of the spine. However, another study stated that both diadynamic current and Transcutaneous electrical nerve stimulation currents can relieve pain and improve functional abilities in patients with lumbar discopathy on completion of the therapy.[13] Sayilir et al,[14] found that both diadynamic current and Transcutaneous electrical nerve stimulation relieved pain relief at the end of one month of therapy. Sayilir et al, argued that this demonstrates that diadynamic current has direct benefits for the relief of chronic pain in the medium-term which has indirect benefits such as improving functional, personal, occupational and social outcomes resulting from living with pain. Our findings are consistent with Sayilir et al.

Strengths of this study include adherence to CONSORT principles in design and reporting, meeting the recruitment target estimated *a priori* by a sample size calculation, per protocol analysis with no dropouts or withdrawals at the 6-month follow-up time point, and blinded assessment of outcomes.

A benefit also found with the application of diadynamic current associated with performing exercises was the reduction in the consumption of analgesic medication, which proves its effectiveness in relieving pain, with the lowest risk of causing adverse side effects.[32]

A limitation of the study was the absence of a placebo control for the diadynamic current intervention, i.e. absence of a sham diadynamic current combined with exercise. This was due to the logistical challenges of creating a sham diadynamic current device and constraints resourcing additional personnel to administer the placebo diadynamic current intervention. We acknowledge that this reduces confidence in our ability to attribute outcomes to diadynamic *currents* per se, and that other aspects of the diadynamic treatment intervention, such as patient-therapist interaction, and expectations associated with receiving any type of treatment, may have contributed to beneficial effects. Nevertheless, our findings support claims that diadynamic current has potential for clinical utility and therefore we recommend follow-up studies to isolate effects associated with the electrical currents of diadynamic treatment with greater precision. A significant limitation of the present study lies in the choice of an effect size of 0.8 as the basis for sample size calculation. We acknowledge that this value is considered high, based on specific considerations within the context of our study and on previous guidelines in the literature, notably those proposed by Cohen (1988)[34] for behavioral studies. Cohen's interpretations should not be deemed universal. Effect size, or how large the difference is, can impact statistical power. This means that when there is a larger effect size, there is a greater difference between groups. It is crucial to recognize that the use of a higher effect size can directly influence the required sample size to achieve adequate statistical power. However, we understand that this choice may lead to discussions regarding the generalization of results, considering the magnitude of the effect compared to similar interventions. Importantly, after the analyses, the obtained values for the effect size were greater than 1.0. This observation is critical and may indicate a more substantial effect magnitude than initially anticipated.

In conclusion, patients with symptomatic knee osteoarthritis receiving eight-weeks of treatment with Diadynamic currents associated to an exercises program enjoyed clinically significant improvements compared to those receiving exercises alone. Beneficial effects were seen in pain, disability and medication intake and were sustained for six months.

CLINICAL MESSAGES

- For people with knee osteoarthritis, adding diadynamic current into an 8-week programme of strength exercises improves pain and disability, which is maintained at six-month follow-up.
- Patients with knee osteoarthritis who received diadynamic current application associated with an 8-week exercise program presented a greater reduction in the use of medication (paracetamol), where the number of days of analgesic use medication for knee pain relief was significantly reduced.
- Benefits were observed when diadynamic current was administered for 4 minutes on each knee before commencement of exercises and using a sequence of different diadynamic currents: diphase current 2 minutes and long period current 2 minutes. The intensity depended on the patient's individual reactions and on average amounted to 15 mA.

AUTHOR CONTRIBUTIONS

All authors have made substantial contributions to all three of the sections below:

(1) Conception and design of the study or acquisition of data, or analysis and interpretation of data.

(2) Draughting the article or revising it critically for important intellectual content.

(3) Final approval of the version to be submitted.

Specifics:

PPA: Conception and design, collection of data, analysis and interpretation of the data, draughting of the article, MIJ: Conception and design, interpretation of the data and critical revision of the article for important intellectual content, JMB: Conception and design, interpretation of the data and critical revision of the article for important intellectual content, GBP and WSJ: Analysis and interpretation of the data, Statistical expertise, RAC: Conception and design, interpretation of the data, critical revision of the article for important intellectual content. All authors read and approved the final manuscript. The primary author: Patricia Pereira Alfredo (patriciaalfredo@yahoo.com.br) takes responsibility for the integrity of the work as a whole, from inception to finished article.

CONFLICTS OF INTERESTS

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this study. Mark I. Johnson's declares that in the previous 5 years his employer has received income for expert consultancy services that he has undertaken for GSK plc, TENSCare, and LifeCare Ltd. that lie outside of the submitted work. Mark I. Johnson also declares book royalties from Oxford University Press.

COMPETING INTEREST STATEMENT

The authors certify that the grant sponsor is not involved in study design, collection, analysis and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication.

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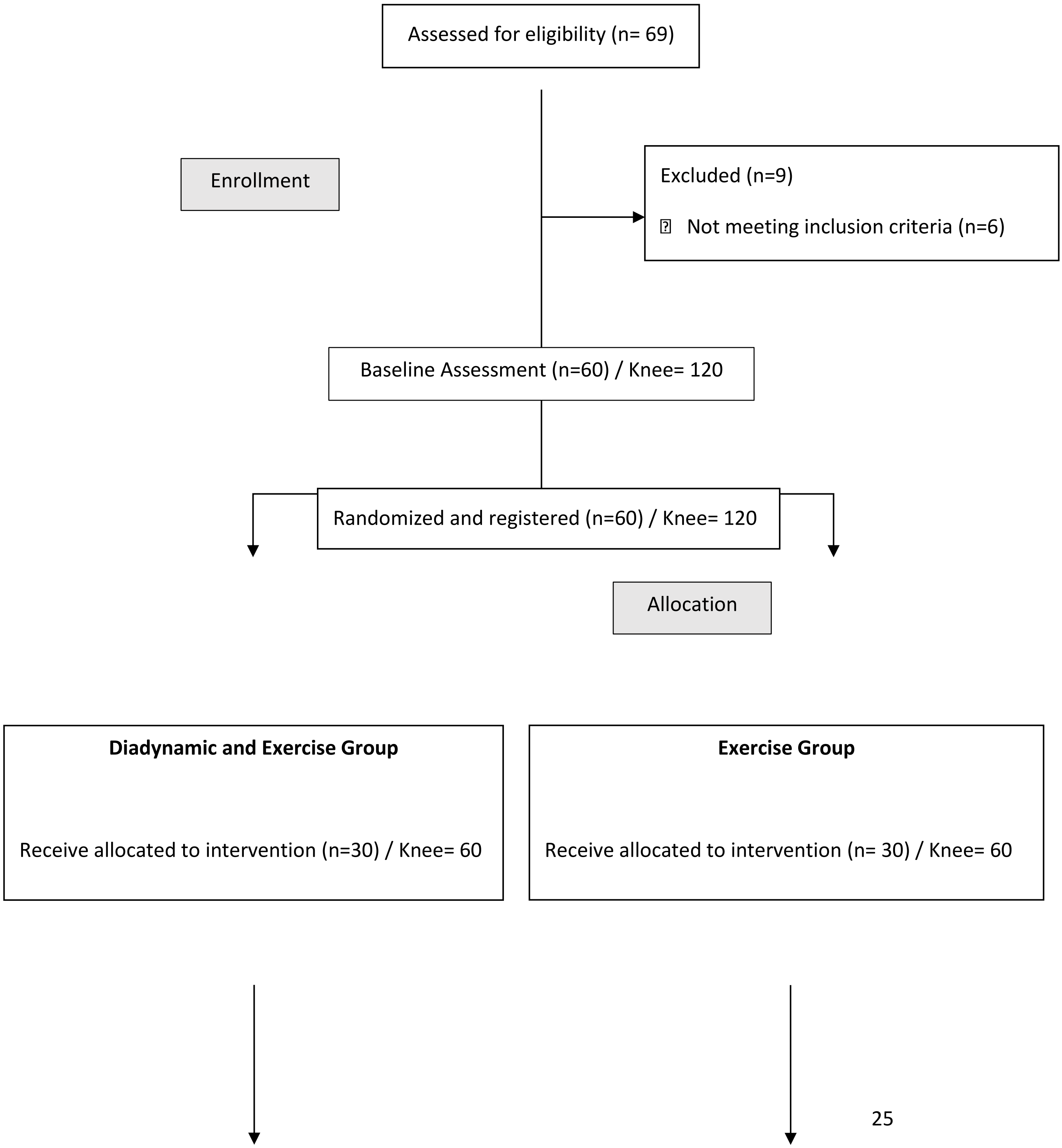
FIGURES AND TABLES

Table 1: Exercise program conducted over the eight weeks of treatment.

PHASES	EXERCISES
P1 (week 1 - week 2) Objectives: Range of Motion Motor Learning Balance Coordination	Each exercise had 30 repetitions and 2 sets: • Sitting in the chair with a weight on the ankle, knee and stretch the foot to rotate alternately in and out then change legs. • Lying prone. Bend the knee slowly as much as possible. Stretch the knee slowly. • Standing with support. Bend the knees to approximately 60 degree. Push up again. • Walk on a 3 m line without stepping besides the line. • Walk-standing. Transfer your body-weight from one leg to the other.
P2 (week 3 – week 5) Objective: Strengthening	Each exercise had 20 repetitions and 3 sets: • Standing. Bend your knees to approximately 60 degrees, and up again. • Walk sideward by crossing legs. To right and left. • Standing on a balance board. Hold the balance. • Lying prone. Bend one knee as much as possible. • One foot-standing on a step. Bend your knee until the other foot touch the floor, push up again.
P3 (week 6 - week 8) Objective:	Each exercise had 20 repetitions and 3 sets: • Walk sideward by crossing steps. To right and left. • Standing on one leg. Bend the knee to approximately 60 degree, and up again. • Standing on a balance board. Keep the balance. More difficult if eyes are closed.

Strengthening	• Standing on the floor. Get up on your toes, hold 1-2 sec., and get down again • Sitting with weight around the ankle. Stretch the knee slowly, hold the stretch 3-4 sec., and slowly down again.



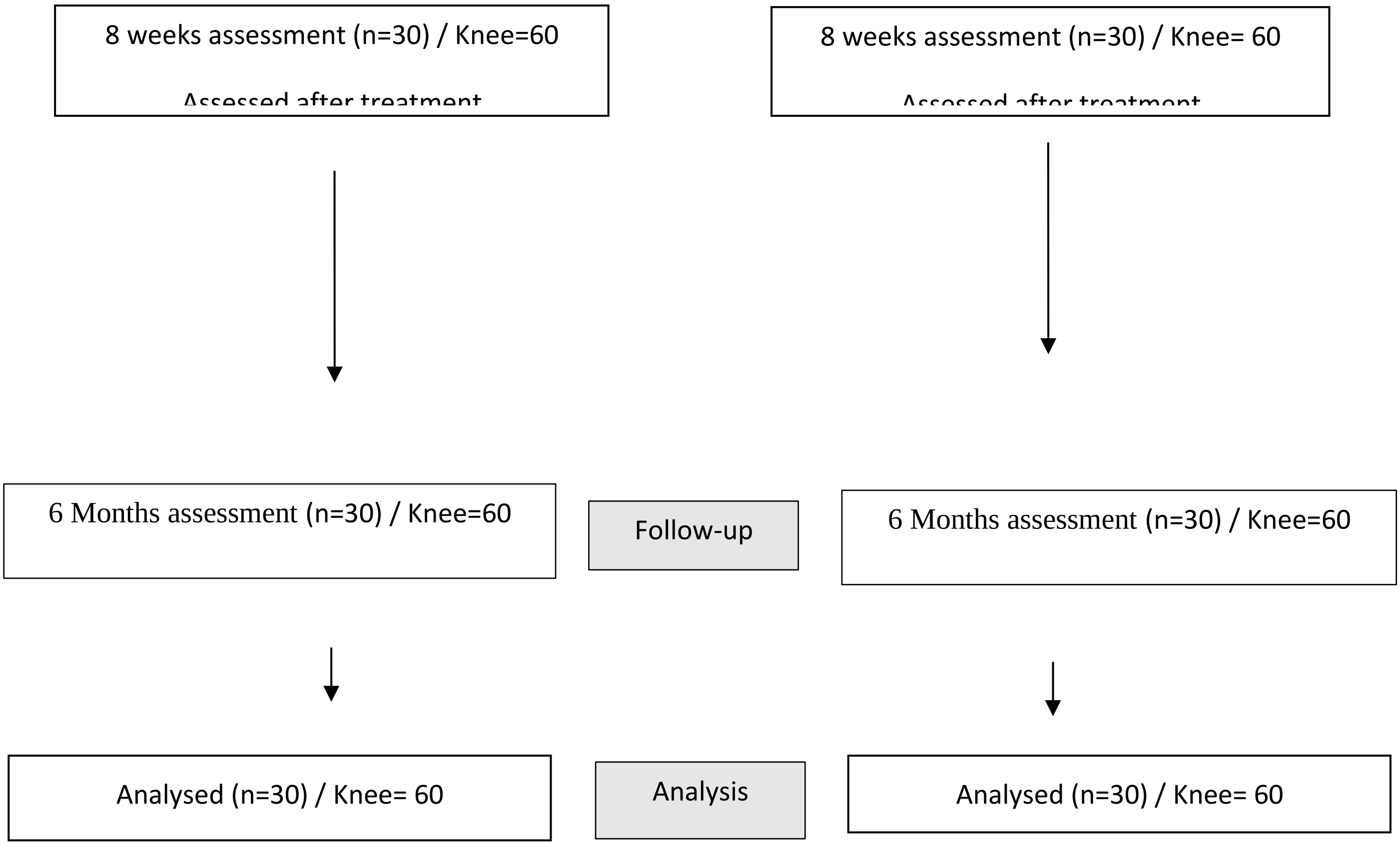


Figure 1- Participant flow diagram.

Table 2: Clinical and demographic characteristics of the participants in both groups.

CHARACTERISTICS	**DIADYNAMIC AND EXERCISE GROUP (N=30/ KNEE= 60) MEAN (SD) n (%)**	**EXERCISE GROUP (N=30/ KNEE= 60) MEAN (SD) n (%)**
AGE (YEARS)	61.33 (8.83)	65.4 (8.10)
WEIGHT (KG)	79.11 (14.70)	77.48 (8.72)
HEIGHT (M)	1.63 (0.07)	1.62 (0.07)
BMI (KG/M^2)	29.69 (5.28)	29.23 (3.08)
GENDER		

Female	20 (66.7%)	21 (70%)
Male	10 (33.3%)	9 (30%)
PARTNERSHIP	23 (68%)	21(66%)
EDUCATION (YEARS)	8 (3,5)	7 (3,0)
SMOKER	15 (3,5)	14 (3,0)
WORKING STATUS		
Employed	5 (17%)	9 (30%)
Unemployed	1 (3%)	3 (10%)
Retired	24 (80%)	18 (60%)
ETHNICITY		
Brown-skinned	5 (17%)	3 (10%)
Caucasian	10 (33%)	15 (50%)
Black	12 (40%)	8 (27%)
Native Brazilian	0 (0%)	0 (0%)
Asian	3 (10%)	4 (13%)
Kellgren Lawrence (OA)		
0	0 (0%)	0 (0%)
2	2 (3.33%)	2 (3.33%)
3	47 (78.33%)	50 (83.33%)
4	11 (18,33%)	8 (13.33%)
DURATION OF SYMPTOMS (YEARS)		
5	1 (3,33%)	2 (6,66%)
10	2 (6,66%)	3 (10%)
20	11 (36,66%)	11 (36,66%)
30	16 (53,3%)	14 (46,7%)

N= number; Kg= Kilograms; M= meters; SD= Standard Deviation; BMI= Body Mass Index; OA= Osteoarthritis