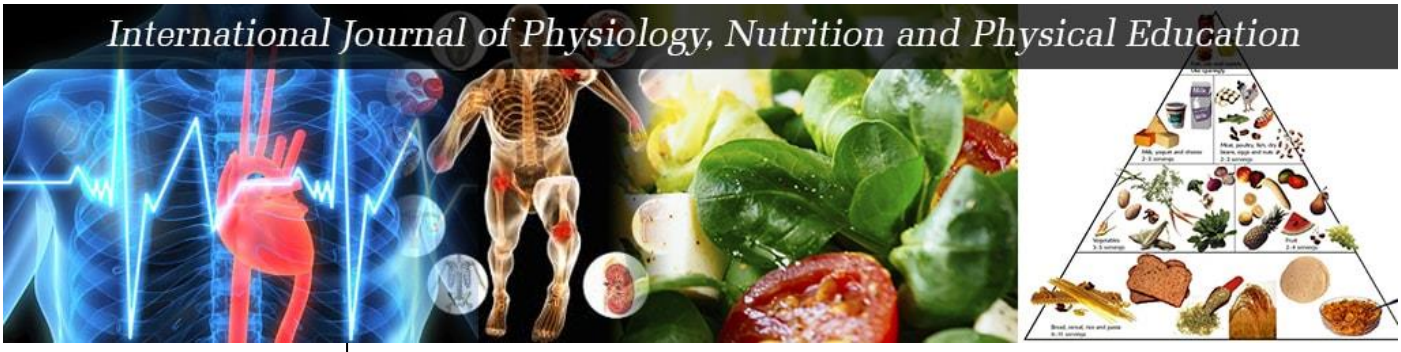

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Maryam Shahzamani
Ph.D. Student of Physical Education. Mysore University, Mysuru, Karnataka, India

Dr. S Madialagan
Research Scholar, Department of Physical Education, Mysore, Karnataka, India

Correspondence
Maryam Shahzamani
Ph.D. Student of Physical Education. Mysore University, Mysuru, Karnataka, India

Effectiveness of exercise therapy to improvement range of motion on lumbar hyper lordosis middle aged women

Maryam Shahzamani and Dr. S Madialagan

Abstract
Importance of this article is knowing about human back and lumbar spine. This article answer to important questions such as what is lordosis deformity? How lordosis deformity is happening? What is the range of motion? How lordosis deformity effect on range of motion? What is exercise therapy and William exercise? How William exercise effect on range of motion?
The peruse of this study was to assess the effect of exercise therapy for improvement range of motion. The data were considered in relation to recommended levels of exercise therapy can be effective helping to improve range of motion in middle aged women who had hyper lordosis deformity. In this article level of participation in twelve week William exercises were explored. The participants in this study were 20 middle ages women.10 were experimental group (affected by hyper lordosis deformity) and 10 were control group (affected by hyper lordosis). The sample was collected through random sampling method. Three months considered for treatment protocol, six exercises done in three random days of each week of three months To assess the range of motion three test considered (standing lumbar flexion, lateral flexion, straight leg raise) use to evaluate the subjects before(pretest)the beginning of the program, the first and the last of each month. The result showed experimental group that did leg raise test have significantly pain reduction.

Keywords: finger trip to floor, hyper lordosis

Introduction
The aim of the present study was to Effectiveness of exercise therapy to improvement range of motion on lumbar hyper lordosis. William exercise has been shown positively influence of range of motion in hyper lordosis this effect was measured in sample of middle aged women in two experimental and control group.
According to this article Mohan Kumar Faculty of Physiotherapy, Dr. MGR Educational & Research Institute University, Velappanchavadi, Chennai, Tamil Nadu, India he selected 30 patients of both male and female were selected from the ACS medical college and hospital Chennai to research about effectiveness of William's flexion exercise in the management of low back pain said result There is significant effects of William's exercises to most of the participants. Its effective technique to increase range of motions [1].
In another case Hannah Rajsekhar Principal, Apollo College, P Suma Latha Vice-Principal, Apollo college did research about effectiveness of lumbar stabilization exercises in patients with sub-acute non-specific low back pain. They selected 30 patients with nonspecific sub-acute low back pain both groups received 6 weeks of exercises intervention. Both groups showed improvement range of motion and reduction in disability scores [2].
When viewed from the side, an adult spine has a natural S-shaped curve. And allow range of motion throughout the spinal column. The function of the lumbar spine is to bear the weight of the body. Sometimes because of weak body posture and many cause more inward curving of a part of the lumber and cervical vertebral column. That lead to lordosis deformity. Excessive lordosis is termed as swayback or saddle back. In the situation of lumbar lordosis muscles of the erectors of spine and hip flexors (Iliopsoas muscle) are become short and stiff. Hip extensors (hamstrings and gluteus Maximus. are become weak or stretches. Lumbar lordosis maybe affected on range of motion also [3].

Range of Motion is the measurement of movement around a specific joint or body part. Range of motion refers to the amount of movement that a particular joint or body part can move measured in degrees. Reduction in a normal range of motion in any of the joints is known as limited range of motion.one of the best ways for improvement range of motion is exercises.in this article we want to know how William exercises effected range of motion on hyper lorsosis patients. Williams flexion exercises also called Williams lumbar flexion exercises, Lumbar flexion exercises or simply Williams exercises are a set or system of related physical exercises intended to enhance lumbar flexion. The lumbar spine, commonly known as the low back, is also tested during range of motion exams. The lumbar spine has five vertebrae and connects the spine to the pelvis. Normal lumbar ranges of motion include 60 degrees of flexion, 25 degrees of extension, and 25 degrees of lateral, or side, bending. The history of patient movement and physical exam are likely to measurement of range of motion. Examination should include inspection of the spine range-of-motion testing, as well as manual muscle testing. Inclinometer for the measurement of spinal range of motion. It is designed for measuring spinal range of motion without needing additional software [4].

1.1 Hypotheses

1. 12-week Williams exercises no effect on lower back range of motion of Iranian middle aged women.
2. There is no difference between experimental group and control group.

2. Methodology

2.1 Sample

In the present study selected twenty samples, who affected by hyper lordosis as the experimental group (10 member) and control group (10 member). From women employed in the oil industry, three are in high-ranking positions (over-grade) and eight in high-ranking positions (GRID), and 350 in the headquarters and presidency.120 women are working in the Isfahan Refinery 38 of them which have hyper lordosis. Twenty samples were identified among population.

2.2 Data collection

Patients with hyper lordosis were identified in the clinic under the supervision of the physician. Subjects with Hyper lordosis were all with back pain, (Muscle pain) that had previously been diagnosed by a doctor.

2.3 Statistical method

The raw materials obtained from measurement of research variables was analyzed using SPSS v. 22 and descriptive and inferential statistics.

Table 1: Time allocated

Time allocated	In first month six exercises the time which allocated is 40 sec and the time for one day is about an hour and twenty minutes.
	In second month of six exercises the time which allocated is 40 sec and the time for one day is about an hour and twenty minutes.
	In third month of six exercises the time which allocated is 40 sec and the time for one day is about an hour and twenty minutes.
Organization based on sets (for three times a week)	six exercises of the first month include one set
	six exercises of the second month include one set
	six exercises of the third month include one set
Intensity	The intensity of the first month during one months is the 40$
	The intensity of the second month during one months is the 70%
	The intensity of the third month during one months is the 100%

Table 2: Time allocated for rest between each exercises

Exercise	Type of exercise	Time allocated for performance	Repetition	Time allocated for rest between each exercises
Exercise no.1 posterior pelvic tilt	Strength exercise	40 second	Depend on ability	2 and half minutes
Exercise no.2 single knee to chest stretch	Strength exercise	40 second	Depend on ability	2 and half minutes
Exercise no.3 double knee to chest	Strength exercise	40 second	Depend on ability	2 and half minutes
Exercise no.4 standing lumbar flexion	Endurance exercise	40 second	Depend on ability	2 and half minutes
Exercise no.5 partial sit-up	Endurance exercise	40 second	Depend on ability	2 and half minutes
Exercise no.6 partial diagonal sit-up	Endurance exercise	40 second	Depend on ability	2 and half minutes

Table 3: Range of motion defended

Name of test	Definition	Aim	process	Measurement	Range of motion defended
Leg raise test	Physical examination to determine whether a patient with low back pain.	evaluate the range of motion of hip flexion with the knee extended passively	The straight leg is raised as far as possible in sleeping on back position.	Place the central of goniometer over the greater trochanter and the stationary goniometer arm parallel to the vertebral spine.	Range of motion was defined as the difference between the angle formed from the initial to the final positions.

Fingertip test	physical examination to determine whether a patient with low back pain	evaluate the range of motion of lumbar flexion	stand erect and bend forward as far as possible with the knees fully extended and heel on the floor	s2 is identified and marked. The inclinometer is centered over the mark at T12 and zeroed.	the ROM value on the inclinometer is recorded for total flexion.
Lateral flexion test	physical examination to determine whether a patient with low back pain	evaluate the range of motion of lumbar	slide your left hand down the outer aspect of your left leg as far as possible	Place the central of goniometer over the greater trochanter and the stationary goniometer arm parallel to the vertebral spine	Range of motion was defined as the difference between the angle formed from the initial to the final positions.

Table 4: Std. Deviation

	Group	Mean	Std. Deviation	N
Fingertrip_Pre	Experimental	26.3000	4.64399	10
	Control	26.3000	4.08384	10
	Total	26.3000	4.25626	20
Fingertrip_1m	Experimental	32.9000	5.15213	10
	Control	26.7000	4.32178	10
	Total	29.8000	5.61577	20
Fingertrip_2m	Experimental	37.2000	4.58984	10
	Control	27.3000	4.08384	10
	Total	32.2500	6.60841	20
Fingertrip_3m	Experimental	41.7000	4.90011	10
	Control	27.9000	4.09471	10
	Total	34.8000	8.33256	20

Table 5: Tests of Within-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Change	787.038	3	262.346	60.470	.000
Change *Group	516.938	3	172.313	39.718	.000
Error(Change)	234.275	54	4.338		

Measure: Measure_1

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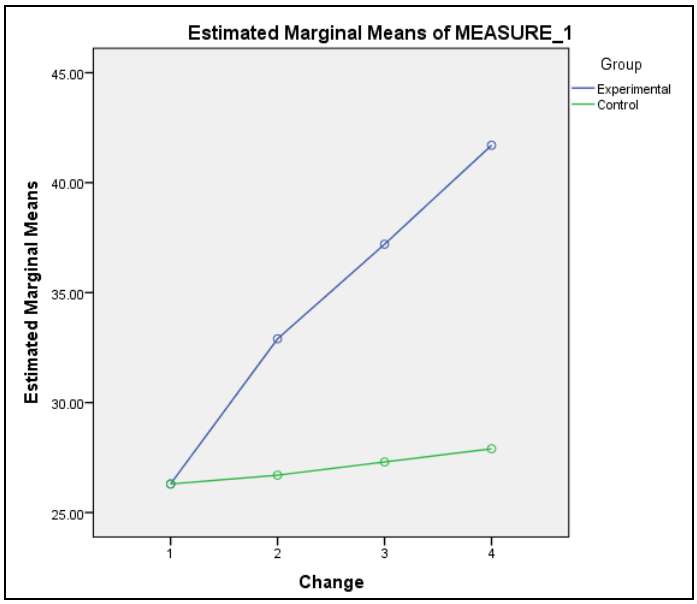

Fig 1: Estimated Marginal Means of Measure_1

Table 6: Descriptive Statistics

	Group	Mean	Std. Deviation	N
Lateral_Pre	Experimental	22.3000	3.83116	10
	Control	21.0000	3.05505	10
	Total	21.6500	3.43779	20
Lateral_1m	Experimental	26.1000	3.44642	10
	Control	21.6000	2.63312	10
	Total	23.8500	3.77352	20
Lateral_2m	Experimental	31.0000	3.74166	10
	Control	22.1000	3.03498	10
	Total	26.5500	5.64265	20
Lateral_3m	Experimental	36.0000	5.59762	10
	Control	22.5000	3.10018	10
	Total	29.2500	8.20703	20

Table 7: Tests of Within-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Change	651.750	3	217.250	88.008	.000
Change * Group	422.950	3	140.983	57.113	.000
Error (Change)	133.300	54	2.469		

Measure: Measure_1

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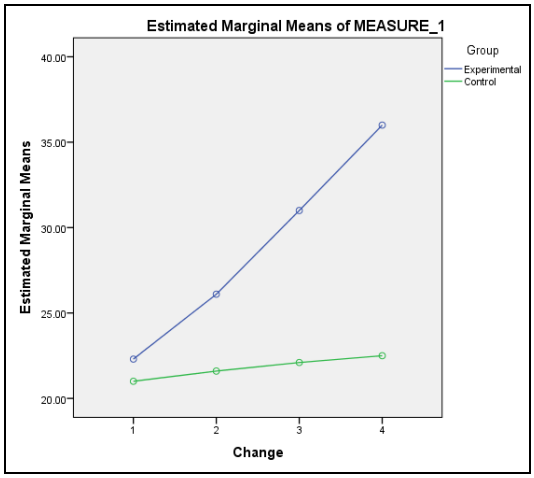

Fig 2: Estimated Marginal Means of Measure_1

Table 8: Descriptive Statistics

	Group	Mean	Std. Deviation	N
Leg_raise_Pre	Experimental	29.3000	6.86456	10
	Control	27.2000	5.26624	10
	Total	28.2500	6.05132	20
Leg_raise_1m	Experimental	33.5000	5.68135	10
	Control	27.8000	5.13809	10
	Total	30.6500	6.02866	20
Leg_raise_2m	Experimental	38.5000	5.79751	10
	Control	28.0000	5.29150	10
	Total	33.2500	7.62872	20
Leg_raise_3m	Experimental	44.3000	5.49848	10
	Control	28.7000	5.25040	10
	Total	36.5000	9.56144	20

Table 9: Tests of within-subjects effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Change	751.838	3	250.613	93.736	.000
Change * Group	516.037	3	172.012	64.337	.000
Error(Change)	144.375	54	2.674		

Measure: Measure_1

Profile Plots

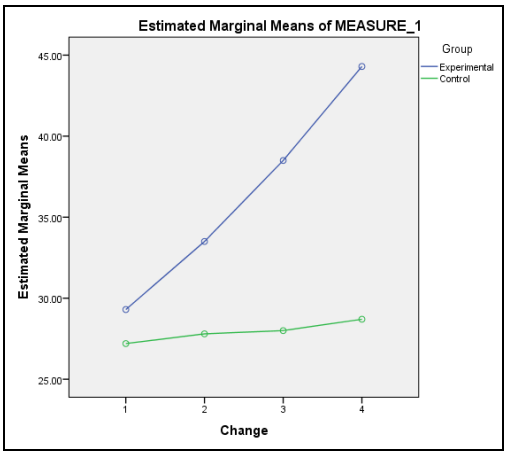

Fig 3: Estimated marginal means of measure_1

Leg rise test

Table Mean degree values on leg rise test during pre, one month, 2 months and 3 months duration and results of repeated measure ANOVA

Table 10: Test statistics

Group	Duration								Change
	Pre test		One month		2 months		3 months		
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	
Experimental	29.30	6.86	33.50	5.68	38.50	5.80	44.30	5.50	15.00
Control	27.20	5.27	27.80	5.14	28.00	5.29	28.70	5.25	1.50
Total	28.25	6.05	30.65	6.03	33.25	7.63	36.50	9.56	8.25
Test statistics	F (Change) =93.736; p=.001								
	F (Change x Group) =64.337; p=.001								

From the table it is clear that irrespective of the groups, on the whole, there was significant increase in mean degree values on the leg rise test (F=93.776; p=.001). An increase of 8.25 degree from pre to 3 months observed (pre 28.25; 3 months 36.50). However, when group wise comparison was made, again repeated measure ANOVA revealed a significant difference between the experimental and control groups (F=64.337; p=.001). From the mean values it is clear that experimental group had a gain of 15.00 degrees from pretest to 3 months (pre 29.30; post 44.30) as against control group which had gained only 1.50 degrees (pre 27.20; post 28.70). In other words, exercise therapy had significantly increased the leg rise in the experimental group than control group.

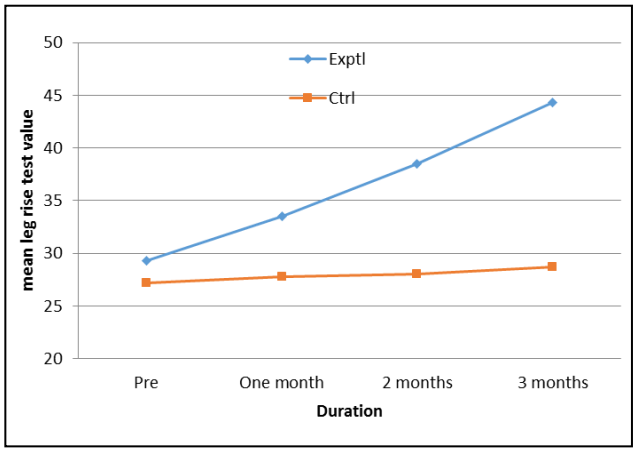

Fig 4: Mean degree values on leg rise test during pre, one month, 2 months and 3 months duration

Fingertip test

Table Mean degree values on fingertip test during pre, one month, 2 months and 3 months duration and results of repeated measure ANOVA

Table 11: Test statistics

Group	Duration								Change
	Pre test		One month		2 months		3 months		
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	
Experimental	26.30	4.64	32.90	5.15	37.20	4.59	41.70	4.90	15.40
Control	26.30	4.08	26.70	4.32	27.30	4.08	27.90	4.09	1.60
Total	26.30	4.26	29.80	5.62	32.25	6.61	34.80	8.33	8.50
Test statistics	F (Change) =60.470; p=.001								
	F (Change x Group) =39.718; p=.001								

In the case of fingertip test, on the whole, there was significant increase in mean degree values on the fingertip test (F=60.47; p=.001). An increase of 8.50 degree from pre to 3 months observed (pre 26.30; 3 months 34.80). However, when group wise comparison was made, again repeated measure ANOVA revealed a significant difference between the experimental and control groups (F=39.718; p=.001). From the mean values it is clear that experimental group had a gain of 15.40 degrees from pretest to 3 months (pre 26.30; post 41.70) as against control group which had gained only 1.60 degrees (pre 26.30; post 27.90). In other words, exercise therapy had significantly increased the fingertip degree values in the experimental group than control group.

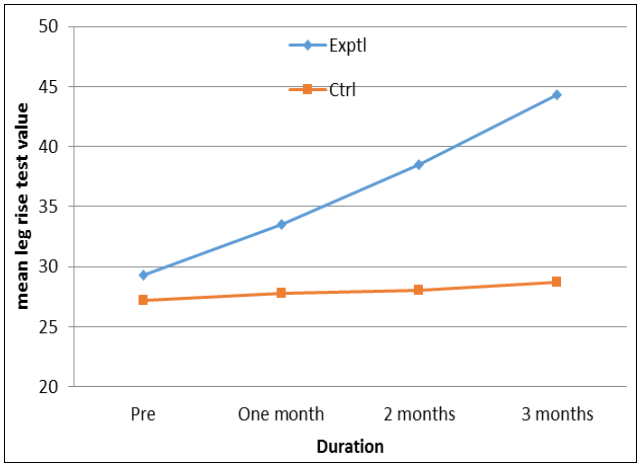

Fig 5: Mean degree values on fingertip test during pre, one month, 2 months and 3 months duration

Lateral flexion test

Table Mean degree values on lateral flexion test during pre, one month, 2 months and 3 months duration and results of repeated measure ANOVA.

Table 12: Test statistics

Group	Duration								Change
	Pre test		One Month		2 Months		3 Months		
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	
Experimental	22.30	3.83	26.10	3.45	31.00	3.74	36.00	5.60	13.70
Control	21.00	3.06	21.60	2.63	22.10	3.03	22.50	3.10	1.50
Total	21.65	3.44	23.85	3.77	26.55	5.64	29.25	8.21	7.60
Test statistics	F (Change) =88.008; p=.001								
	F (Change x Group) =39.718; p=.001								

As far as lateral flexion test, on the whole, there was significant increase in mean degree values (F=88.008; p=.001). An increase of 7.60 degree from pre to 3 months observed (pre 21.65; 3 months 29.25). However, when group wise comparison was made, again repeated measure ANOVA revealed a significant difference between the experimental and control groups (F=39.718; p=.001). From the mean values it is clear that experimental group had a gain of 13.70 degrees from pretest to 3 months (pre 22.30; 3 months 36.00) as against control group which had gained only 1.50 degrees (pre 21.00; 3 months 22.50). In other words, exercise therapy had significantly increased the lateral flexion in the experimental group than control group.

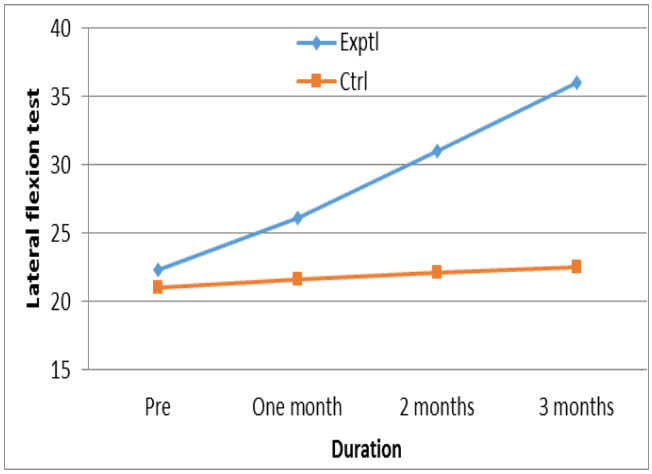

Fig 6: Mean degree values on lateral flexion test during pre, one month, 2 months and 3 months duration

Discussion

Major findings of the study

- Exercise therapy significantly increased leg rise degree in the experimental group compared to control group
- Exercise therapy significantly increased fingertip values in the experimental group compared to control group
- Exercise therapy significantly increased lateral flexion in the experimental group compared to control group

References

1. Malanga GA, Dunn KR. Low back pain management: approaches to treatment J Musculoskeletal Med. 2010; 27:30515.
2. Koes BW, van Tulder MV, Thomas S. Diagnosis and treatment of low back pain. BMJ. 2006; 332:1430-1434.
3. Lisa Cleveland PT, Mary Kemper. Mayfield Clinic, Cincinnati, Ohio
4. Chris, Collora (2012-07-12). Master's of Physical Therapy (MPT) vs. Doctor of Physical Therapy (DPT) Degree. Exercise Science Guide, 2016.