International Journal of Physical Education & Sports Sciences
Vol. 17, Issue No. 1, January-2022, ISSN 2231-3745

DOI: https://doi.org/10.29070/4k8mm387

Effects of Floor and Swiss Ball Exercise on the Rehabilitation of Back Pain

Suresh Babu Nannapaneni [1] * , Dr. Sudhakara Babu Mande [2]

1. M.P.Ed Student, Pragathi College of Physical Education, (Recognized by the NCTE, Affiliated to Andhra university, Visakhapatnam).Kothavalasa, Vizianagaram (Dt). Andhra Pradesh, India
sudhkarmande7@gmail.com ,
2. Principal, Pragathi College of Physical Education, (Recognized by the NCTE, Affiliated to Andhra university, Visakhapatnam).Kothavalasa, Vizianagaram (Dt). Andhra Pradesh, India

Abstract: The purpose of the study was to find out the effect of floor and swiss ball exercise on therehabilitation of back pain. The researcher used the random group design in this study. In this researchdesign randomly selected sixty women who suffered from back pain. They were measured of their backpain through administration of Questionnaire and their initial back pain was determined. The subjectswere randomly divided into three groups, consisting of twenty subjects each. First experimental groupunderwent floor exercises prescribed for rehabilitation of back pain, the second experimental groupunderwent swiss ball exercises and the third group acted as control group. The experimental period wasfor five weeks. After the experimental period of five weeks, the subjects were tested of their back painlevel through administration of the questionnaire. The difference between the pre and post experimentalscores were considered the effect of the respective trainings given. The data collected were statisticallyanalysed through Analysis of Covariance (ANCOVA). The results shows that the obtained F value 20.23was greater than the required value of 3.15 and hence it was accepted that the floor exercises, and swissball exercises significantly reduced the back pain of the subjects compared to control group. Thepost hoc analysis of obtained ordered adjusted means proved that there was significant differencesexisted between swiss ball exercise group and control group and floor exercises group and controlgroup. And there was no significant difference between treatment groups, namely, floor exercises groupand swiss ball exercise group in altering back pain of the women. It was concluded that swiss ballexercises and floor exercises can be suggested for reducing back pain among women.

Keywords: floor exercises, swiss ball exercises, rehabilitation, back pain, random group design, women, Questionnaire, experimental group, control group, ANCOVA

X

INTRODUCTION

Back pain is common; approximately nine of ten adults experiencing it at some point in their lives, and five of ten working adults experience back pain each year.(A.T. Patel, and A.A. Ogle., 2007) Some estimate that as many of 95% of people will experience back pain at some point in their lifetime. It is the most common cause of chronic pain and is a major contributor to missed work and disability. (Church E, Odle T, 2007) For most individuals, back pain is self-limiting. Most people with back pain do not experience chronic severe pain but rather persistent or intermittent pain that is mild or moderate. In most cases of herniated disks and stenosis, rest, injections or surgery have similar general pain-resolution outcomes on average after one year. It is the single leading cause of disability worldwide.(Manchikanti L, et.al. 2009).

Moderate-quality evidence exists that suggests that the combination of education and exercise may reduce an individual's risk of developing an episode of low back pain. Lesser-quality evidence points to exercise alone as a possible deterrent to the risk of the condition.(Patel et al., 2017)

The management goals when treating back pain are to achieve maximal reduction in pain intensity as rapidly as possible, to restore the individual's ability to function in everyday activities, to help the patient cope with residual pain, to assess for side effects of therapy and to facilitate the patient's passage through the legal and socioeconomic impediments to recovery. For many, the goal is to keep the pain at a manageable level to progress with rehabilitation, which then can lead to long-term pain relief. Also, for some people the goal is to use nonsurgical therapies to manage the pain and avoid major surgery, while for others surgery may represent the quickest path to pain relief.(Baron R, et.al. 2016).

Exercise is one of the most important parts of a treatment program for people with pain that lasts more than a few days. In fact, if any one have many minor episodes of neck or back pain, exercise usually should be part of the treatment. For the more lasting problems, exercise is a must. One of the few solid scientific research studies in this area of medicine demonstrated that in people who had low back pain, a regular exercise program was the single most important difference between the people who were feeling better and those who were feeling worse. They studied people who had a low back injury at work, and were treated with various methods of treatment. The people were not all treated by the same doctors or in the same way.

Swissball are highly effective when used for general fitness and these exercises can either be done in the home or gymnasiums. For this it is not having to lie on a hard floor, instead it gives training much more comfortably a primary benefit of exercising with a Swiss ball as opposed to exercising directly on a hard flat surface is that the body responds to the instability of the ball to remain balanced, engaging many more muscles to do so. Those muscles become stronger over time to keep balance. Most frequently, the core body muscles, the abdominal muscles and back muscles are the focus of exercise ball fitness programs.

Athletic rehabilitation is the reconditioning of an injured athlete to his or her highest level of function in the shortest possible time. This level of function is generally higher than that of a non athlete. Athletic trainers must be skilled in developing programs to effectively rehabilitate an athlete in minimal amount of time. Depending on the nature and the conditions surrounding the injury Rehabilitation require a progressive, systematic program that develops range of motion, muscular strength and endurance, co-ordinated movements, functional activities and circula respiratory endurance. Although each of these phase overlap maximal development of any phase requires prior development of the preceeding phase. Rehabilitation also includes total body conditioning maintenance occurring concurrently with restoration of the injured area. So the athlete can meet the physical demands of athletic activity when returning to participation (Batt et al. 1996) .

Marshall and Murphy (2008) selected sixteen-week intervention for chronic patients with low back pain (LBP) to find out the effect of supervised Swiss ball exercise and found Self-rated disability improved more after the treatment period for individuals who received supervised exercise compared with advice alone. Marshall and Murphy (2006) made a pilot study was to use a multidimensional model to evaluate deficits in patients with low back pain (LBP) over the course of a 12-week rehabilitation program using the Swiss ball. The score for self-reported disability significantly decreased over the intervention Significant improvements in pain and disability maintained to the 3 months of follow-up.

Hubley-Kozey and Vezina (2002) studied the “Muscle activation during exercises to improve trunk

stability in men with low back pain" All 3 exercises could be used as initial exercises in a dynamic stability progression when low-recruitment amplitudes of specific muscles were the objective. Verbunt (2008) examined the reliability and validity of the physical activity decline (PAD) score: a measure for assessing a decline in the level of physical activity in patients with chronic pain. Based on the fact that 38.7% of the patients had the lowest score of 0, the presence of a floor-effect in the PAD score must be considered.

The research findings proved that swiss ball exercises contributed for the reduction of back paid through strengthening the muscles and floor exercises also contributed for muscle activation to improve trunk stability. This study aims at finding out the effect of floor exercises and swiss ball exercises on back pain.

METHODOLOGY

The subjects for the study were selected from middle aged women who complained of back pain. They were of sixty women age between 35 to 45. The subjects expressed their willingness to participate in the study as they are interested to reduce their back pain.. They were selected at random for the study. The investigator has selected only one dependent variable, namely, back pain.

DESIGN OF THE STUDY

The researcher used the random group design in this study. In this research design randomly selected sixty women who suffered from back pain. They were measured of their back pain through administration of Questionnaire and their initial back pain was determined. The subjects were randomly divided into three experimental groups, consisting of twenty subjects each. First experimental group underwent floor exercises prescribed for rehabilitation of back pain, the second experimental group underwent swiss ball exercises and the third group acted as control group. The experimental period was for five weeks. After the experimental period of five weeks, the subjects were tested of their back pain level through administration of the questionnaire. The difference between the pre and post experimental scores were considered the effect of the respective trainings given. The data collected were statistically analysed through Analysis of Covariance (ANCOVA).

RESULTS

Table 1: Effect of Floor and Swiss Ball Exercises on Back Pain

	SWISS BALL EXERCISES	FLOOR EXERCISES	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	OBTAINED F
Pre Test Mean	13.60	13.20	12.05	Between	25.90	2	12.95	1.29
				Within	570.95	57	10.02	
Post Test Mean	9.35	9.10	11.05	Between	45.03	2	22.52	2.66
				Within	483.30	57	8.48	
Adjusted Post Test Mean	8.85	8.91	11.74	Between	104.90	2	52.45	20.23*
				Within	145.22	56	2.59	
Mean Diff	-4.25	-4.10	-1.00					

(Scores in Number)

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.15, 2 and 56(df) =3.15 .

*Significant

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table II

Table 2: Scheffe's Confidence Interval Test Scores on Back Pain

MEANS				Required . C I
Swiss Ball Exercises	Floor Exercises	Control Group	Mean Difference	
8.85	8.91		-0.06	1.28
8.85		11.74	-2.89*	1.28
	8.91	11.74	-2.83*	1.28

(Scores in Number)

* Significant

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I.

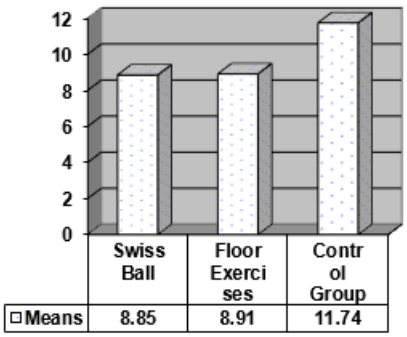

Figure 1: Bar Diagram on Ordered Adjusted Means of Back Pain

(Scores in Number)

DISCUSSIONS ON FINDINGS

Back pain is one of humanity's most frequent complaints. In the U.S., acute low back pain (also called lumbago) is the fifth most common reason for physician visits. About nine out of ten adults experience back pain at some point in their life, and five out of ten working adults have back pain every year.

As shown in Table I, the obtained F value on the scores of pre test means 1.29 was less than the required F value, which proved that the random assignment of the subjects were successful and their scores in back

pain before the training were equal and there was no significant differences. Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 20.23 was greater than the required value of 3.15 and hence it was accepted that the floor exercises, and swiss ball exercises significantly reduced the back pain of the subjects compared to control group.

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between swiss ball exercise group and control group and floor exercises group and control group. This proved that due to five weeks swiss ball exercises and five weeks floor exercises the subjects' back pain was reduced significantly. However, there was no significant reduction in back pain in the case of floor exercise group

The results of this investigation made an attempt in rehabilitation of back pain among women. The findings of this study proved that all the two types of rehabilitation programmes reduced back pain. However, significant reduction in back pain were noted in swiss ball exercises group and floor exercises group than control group, as the obtained mean differences were greater than the required Scheffe's confidence interval. This study is in agreement with the studies of Verbunt JA. (2008) who found PAD questionnaire is reliable and valid in measuring back pain and physical activity reduced back pain.

CONCLUSIONS

It was concluded that swiss ball exercises and floor exercises can be suggested for reducing back pain among women.

References

1. Baron R, Binder A, Attal N, Casale R, Dickenson AH, Treede RD (July 2016). "Neuropathic low back pain in clinical practice". European Journal of Pain. 20 (6): 861–73.
2. Batt et al. (1996) "Athlete Rehabilitation and Reconditioning of Injured Athletes", LNCPE Journal.
3. Church E, Odle T. (2007) Diagnosis and treatment of back pain. Radiologic Technology serial online. 79(2):126–204
4. Manchikanti L, Singh V, Datta S, Cohen SP, Hirsch JA (Jul–Aug 2009). "Comprehensive review of epidemiology, scope, and impact of spinal pain". Pain Physician. 12 (4): E35–70
5. Marshall and Murphy (2006) "Multidimensional model to evaluate deficits in patients with low back pain (LBP)",Journal of Strength and Conditioning Research 88 (3) 252-259
6. Marshall P.W and Murphy B.A (2005) "Core stability exercises on and off a swiss ball", Journal of Strength and Conditioning Research . 86 (2) pp. 242-249
7. Patel ND, Broderick DF, Burns J, et al. (2009)ACR Appropriateness Criteria Low Back Pain. Available at https://acsearch.acr.org/docs/69483/Narrative/ (PDF). p. 6. American College of Radiology.
8. Patel, A.T. and A.A. Ogle. (2008) "Diagnosis and Management of Acute Low Back

Pain". Archived American Academy of Family Physicians

9. Verbunt (2008) Reliability and validity of the physical activity decline (PAD), Archives on Physical Medicine Rehabilitation . 73 (10): 1376-79.

10. Vezina, J.J. and Hubley-Kozey, C.L. (2000), "Muscle Activation in Therapeutic Exercises to Improve Trunk Stability", Archives on Physical Medicine Rehabilitation Vol. 81 (10): PP. 1370-79.