



EFFECT OF PILATES AND CABLE PULLEY AND COMBINED TRAINING ON MUSCULOSKELETAL DISORDERS ON CORE STABILITY, INTRACELLULAR WATER LEVEL AMONG HEALTH CARE PROFESSIONALS

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ABSTRACT The purpose of the study is to find out the Effect of Pilates and Cable Pulley and Combined Training on Musculoskeletal Disorders on Core Stability, Intracellular Water Level among Health Care Professionals. Method of the subject: Experimental design with 60 subjects randomly divided into four equal groups with control, experimental group I, II and III. The age group was between 45-60 were selected for this study. Variables: Core Stability, Intracellular Water Level. Dependent Variables: core strength and Intracellular Water, independent variables: Experimental Group I: Combination of both Pilates and Cable Pulley exercises, Experimental Group II: Pilates, Experimental Group III: Cable Pulley exercises, Experimental Group IV: Control Group. Selection of The Subject: To achieve the purpose of the study sixty (N=60) subjects will be selected on purposive random sampling from the category of the people who were Health Care Professionals. The subjects will be divided into four groups of each group comprising of 15 (n = 15) will be randomly assigned. Training Schedules and Supplementation: During the training period, the experimental group underwent Pilates and Cable Pulley Exercises program period of twelve weeks for all days. Statistical Technique: Analysis of Covariance statistical technique was used, to test the significant difference among the treatment groups. Thirumalaisamy R. (2004). **RESULTS:** Within the limitations of the study, the following conclusions were drawn: 1. Experimental groups showed significantly greater increase on core strength and Intracellular Water than that control group at the end of 12 weeks of training period WITH inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder. 2. Experimental group III showed significantly greater increase on core strength and Intracellular Water than that Experimental group I AND II at the end of 12 weeks of training period WITH inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder. **key words:** core stability, pilates, cable pulley etc.

KEYWORDS :

INTRODUCTION:

Musculoskeletal Disorders or MSDs are injuries and disorders that affect the human body's movement or musculoskeletal system. When a worker is exposed to MSD risk factors, they begin to fatigue. When fatigue outruns their body's recovery system, they develop a musculoskeletal imbalance. Over time, as fatigue continues to outrun recovery and the musculoskeletal imbalance persists, a musculoskeletal disorder develops. Work-related musculoskeletal disorders (WMSDs) are a group of painful disorders of muscles, tendons, and nerves. Carpal tunnel syndrome, tendonitis, thoracic outlet syndrome, and tension neck syndrome are examples.

For the purpose of developing injury prevention strategies, many health and safety agencies include only disorders that develop gradually and are caused by the overuse of the above constituents of the musculoskeletal system. The traumatic injuries of the muscles, tendons and nerves due to accidents are not considered to be WMSDs or are considered separately. However, there are organizations, such as the European Agency for Safety and Health at Work, that include acute traumas and fractures within in the WMSD group.

These risk factors can be broken up into two categories: work-related risk factors and individual-related risk factors.

- High task repetition. Many work tasks and cycles are repetitive in nature, and are frequently controlled by hourly or daily production targets and work processes. High task repetition, when combined with other risks factors such high force and/or awkward postures, can contribute to the formation of MSD. A job is considered highly repetitive if the cycle time is 30 seconds or less.
- Forceful exertions. Many work tasks require high force loads on the human body. Muscle effort increases in response to high force requirements, increasing associated fatigue which can lead to MSD.
- Repetitive or sustained awkward postures. Awkward postures place excessive force on joints and overload the muscles and tendons around the effected joint. Joints of the body are most efficient when they operate closest to the mid-range motion of the joint. Risk of MSD is increased when joints are worked outside of this mid-range repetitively or for sustained periods of time without adequate recovery time.

Statement of The Problem: The purpose of the study is to find out the Effect of Pilates and Cable Pulley and Combined Training on Musculoskeletal Disorders on Core Stability, Intracellular Water Level among Health Care Professionals. **DEPENDENT VARIABLES:** core

strength and Intracellular Water, independent variables: Experimental Group I: Combination of both Pilates and Cable Pulley exercises, Experimental Group II: Pilates, Experimental Group III: Cable Pulley exercises, Experimental Group IV: Control Group.

SELECTION OF THE SUBJECT:

To achieve the purpose of the study sixty (N=60) subjects will be selected on purposive random sampling from the category of the people who were Health Care Professionals. The subjects will be divided into four groups of each group comprising of 15 (n = 15) will be randomly assigned. **TRAINING SCHEDULES AND SUPPLEMENTATION:** During the training period, the experimental group underwent Pilates and Cable Pulley Exercises program period of twelve weeks for all days. Statistical Technique: Analysis of Covariance statistical technique was used, to test the significant difference among the treatment groups. Thirumalaisamy R. (2004).

COMPUTATION OF ANALYSIS OF COVARIANCE OF CORE STRENGTH:

The following tables illustrated the statistical results of the Effect of Pilates and Cable Pulley Exercises in Work Related Musculoskeletal Disorders on Selected Core Stability, Intracellular Water Variables among Health Care Professionals.

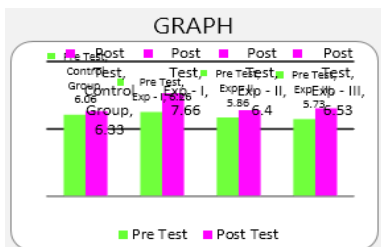
TABLE- I-COMPUTATION OF ANALYSIS OF COVARIANCE OF CORE STRENGTH

TES T	EXP- I	EXP- II	EXP- III	CONT GRO	SV	SS	DF	MS	OF	TF
Pre Test	6.26	5.86	5.73	6.0	B	2.45	3	0.8166	0.35	2.7
					W	132.53	56	2.36		
Post Test	7.66	6.4	6.53	6.3	B	17.7	3	5.91	3.68	2.7
					W	90	56	1.60		
Adju sted	7.45	6.48	6.72	6.2	B	11.77	3	3.92	16.4	2.72
					W	13.1	55	0.23		

SCHEFFE'S POST HOC TEST FOR THE CORE STRENGTH

CNTL GP	EXP.GP 1	EXP.GP 2	COM.GP	MD	CI
6.27	7.45	-	-	-1.18	0.51
6.27	-	6.49	-	-0.22	0.51
6.27	-	-	6.72	-0.45	0.51

-	7.45	6.49	-	0.96	0.51
-	7.45	-	6.72	0.73	0.51
-	-	6.49	6.72	-0.23	0.51



RESULTS OF CORE STRENGTH: Table I shows analysed data on CORE STRENGTH, The Pre Test means were 6.06 Control Group, 6.26 for Experimental Group I, 5.86 for Experimental Group II, 5.73 for Experimental Group III. The obtained 'F' ratio 0.03 was lesser than the table 'F' ratio 2.7. Hence, the pre-test was not significant at 0.05 level of confidence for degrees of freedom 3 and 56.

The Post Test means were 6.33 Control Group, 7.66 for Experimental Group I, 6.4 for Experimental Group II, 6.53 for Experimental Group III. The obtained 'F' ratio 3.63 was higher than the table 'F' ratio 2.72. Hence, the post test was significant at 0.05 level of confidence for degrees of freedom 3 and 56.

The adjusted Post Test means were 90.61 for Control Group, 98.71 for Experimental Group I, and 100.02 for Experimental Group II. The obtained 'F' ratio 111.64 was higher than the table 'F' ratio 3.1. Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 2 and 42.

Finally the all the comparisons in scheffe's post hoc test was significant at 0.05 levels for the degrees of freedom 2 and 42.

DISCUSSIONS AND FINDINGS OF CORE STRENGTH: From these analyses, it is found that the results obtained from the experimental groups had significantly increased when compared with control group and secondly interestingly noted that experimental group I had greater significant changes than the other two experimental groups. So this is due to influence of 12 weeks of training period inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder.

COMPUTATION OF ANALYSIS OF COVARIANCE OF INTRACELLULAR WATER:

The following tables illustrated the statistical results of the Effect of Pilates and Cable Pulley and Combined Training on Musculoskeletal Disorders on Core Stability, Intracellular Water Level among Health Care Professionals.

TABLE- II- COMPUTATION OF ANALYSIS OF COVARIANCE OF INTRACELLULAR WATER

TEST	EXP-I	EXP-II	EXP-III	CONT GRO	SV	SS	DF	MS	OF	TF
Pre Test	64.31	64.34	64.34	64.42	B	0.09	3	0.03	0.19	2.7
					W	9.21	56	0.16		
Post Test	64.53	65.01	64.8	64.39	B	3.43	3	1.14	8.31	2.7
					W	7.72	56	0.137		
Adjusted	64.56	65.02	64.81	64.34	B	3.90	3	1.30	43.2	2.7
					W	1.65	55	0.03	4	

RESULTS OF INTRACELLULAR WATER: Table I shows analysed data on Intracellular Water, The Pre Test means were 64.42 Control Group, 64.31 for Experimental Group I, 64.34 for Experimental Group II, 64.34 for Experimental Group III. The obtained 'F' ratio 0.19 was lesser than the table 'F' ratio 2.72. Hence, the pre-test was not significant at 0.05 level of confidence for degrees of freedom 3 and 56.

The Post Test means were 64.39 Control Group, 64.53 for Experimental Group I, 65.01 for Experimental Group II, 64.8 for Experimental Group III. The obtained 'F' ratio 3.63 was higher than the table 'F' ratio 8.31. Hence, the post test was significant at 0.05 level of confidence for degrees of freedom 4 and 56.

The adjusted Post Test means were 64.34 for Control Group, 64.56 for Experimental Group I, and 65.02 for Experimental Group II. 64.81 for Experimental Group III. The obtained 'F' ratio 43.24 was higher than the table 'F' ratio 3.1. Hence, adjusted post-test was significant at 0.05 levels for the degrees of freedom 3 and 56.

Finally the all the comparisons in scheffe's post hoc test was significant at 0.05 levels for the degrees of freedom 2 and 42.

DISCUSSIONS AND FINDINGS OF CORE STRENGTH: From these analyses, it is found that the results obtained from the experimental groups had significantly increased when compared with control group and secondly it was interestingly noted that experimental group I had more and greater significant changes than the other two experimental groups. So this is due to influence of 12 weeks of training period inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder.

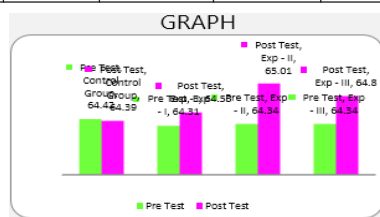
RESULTS:

Within the limitations of the study, the following conclusions were drawn:

- Experimental groups showed significant greater increase on core strength and Intracellular Water than that control group at the end of 12 weeks of training period inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder.
- Experimental group I showed greater increase on Core Strength and Intracellular Water than the Experimental group II, III at the end of 12 weeks of training period inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder

CONCLUSION: Hence its concluded that that the core strength and Intracellular Water was increased from their higher abnormal level to normal level after end of 12 weeks of training period inclusion of Pilates, Cable Pulley and combined training have greatly influenced in the musculoskeletal disorder

CNTL GP	EXP.GP 1	EXP.GP 2	COM.GP	MD	CI
64.34	64.57	-	-	-0.23	0.18
64.34	-	65.02	-	-0.68	0.18
64.34	-	-	64.81	-0.47	0.18
-	64.57	65.02	-	-0.45	0.18
-	64.57	-	64.81	-0.25	0.18
-	-	65.02	64.81	0.21	0.18



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