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## ORIGINAL ARTICLE

**A STUDY TO FIND OUT THE EFFECTIVENESS OF DYNAMIC CORE STABILITY EXERCISES AND STRETCHING IN IMPROVING FLEXIBILITY AMONG MIDDLE AGED OVERWEIGHT MEN**

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### ABSTRACT

**Purpose:** The purpose of this study was to find out the effectiveness of Dynamic Core Stability Exercises and stretching in improving the flexibility of overweight persons who lack flexibility. **Methods:** Fifteen (N=15) overweight middle aged male subjects who had not been into regular exercising and lack flexibility were selected based on the BMI who scored more than 25. All were basically screened out for their lifestyle and work related factors. All the samples were put into flexibility test by using modified sit and reach test. All had received dynamic core stability exercises and stretching of hamstring muscles and the outcome measure was measured using manual muscle testing and modified sit and reach test. **Results:** The outcome measures of muscle power assessed using manual muscle testing (MMT) method 0-5 grading scale system. The mean value of Pre test MMT score is 3.7 and that of the post test mean value is 4.4 which shows a significant improvement ( $P < 0.0001$ ). The flexibility was measured using modified sit and reach test and its mean pre test value is 9.3 and that of the post test value is 12.3 which shows a highly significant improvement in the flexibility ( $P < 0.0001$ ). **Conclusion:** This study showed that person who was identified as overweight based on BMI, were found to be lacking of their body flexibility mainly of back muscles and hamstring muscles. It is concluded that Dynamic core stability exercises and stretching was found to be useful in improving the muscle strength and flexibility.

**Keywords:** Overweight, BMI, Lack of Flexibility, Dynamic Core Stability Exercises, Stretching, Modified Sit and Reach Test

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## INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Being overweight is especially common where food supplies are plentiful and lifestyles are sedentary. The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been an increased intake of energy-dense foods that are high in fat; and a decrease in physical activity due to increasingly sedentary lifestyle<sup>1,2</sup>.

Excess weight has reached epidemic proportions globally, with more than 1 billion adults being either overweight or obese in 2002. In 2013 this increased to more than 2 billion. Increases have been observed across all age groups. In 2014, 39% of adults aged 30 years and over (38% of men and 40% of women) were overweight. Overweight is one of the predisposing factors for serious health hazard such as Muscular laxity, Joints degeneration, loss of flexibility, Diabetes, Myocardial infarction, Stroke etc. This study is aimed to identify the persons who were overweight and were lacking flexibility based on the modified sit and reach test and to find out the effectiveness of dynamic core stability exercises and stretching in improving the flexibility<sup>3,4</sup>.

**Purpose of the study:** The purpose of this study was to determine whether the overweight persons really lack flexibility of their body and to find out the effectiveness of dynamic core stability exercises and stretching in improving the flexibility and

enhancing the muscle power. Lack of flexibility in overweight population who are middle aged desk borne working persons are prone to get various health related hazards. The study was done as pilot study as a part of the Research work to find out the effectiveness of dynamic core stability exercises and aquatic therapy for overweight middle aged men.

## METHODOLOGY

Fifteen (N=15) Samples from desk borne worker of middle aged between 40-50 years were selected by convenient sampling. Dynamic core stability exercises were given to all the subjects thrice a week for 3 weeks with each session lasting for 45 minutes. Dynamic core stability exercises were given to the core muscle group of the abdomen and pelvic floor muscle exercises were also given. Before that, they all were given bilateral static hamstring stretching for 10 secs with three repetitions and core exercises were given later<sup>5,6,7</sup>.

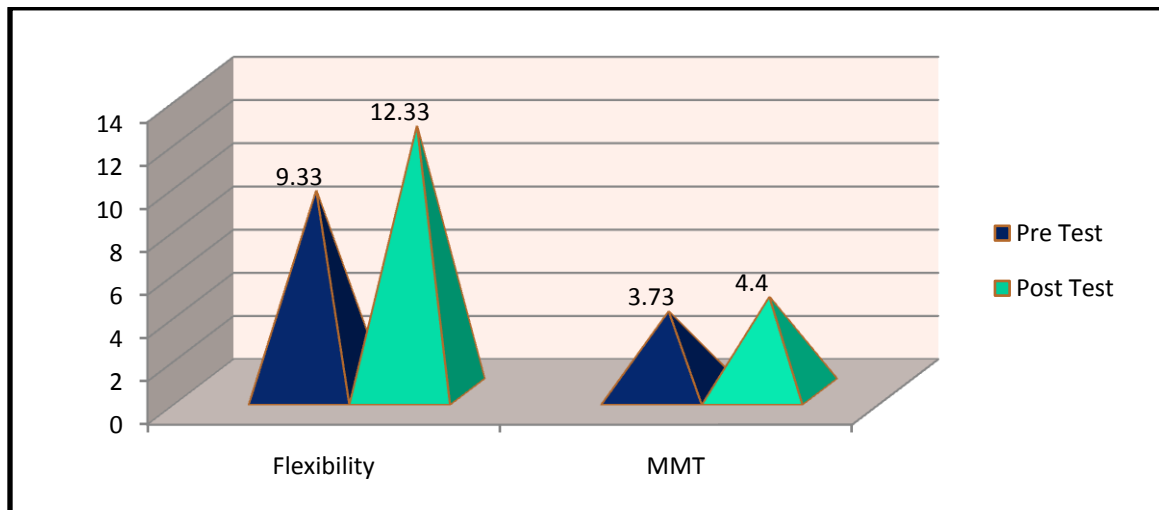
## RESULTS

The outcome measures of muscle power assessed using manual muscle testing (MMT) method 0-5 grading scale system. The mean value of Pre test MMT score is 3.7 and that of the post test mean value is 4.4 which shows a significant improvement ( $P < 0.0001$ ). The flexibility was measured using modified sit and reach test and its mean pre test value is 9.3 and that of the post test value is 12.3 which shows a highly significant improvement in the flexibility ( $P < 0.0001$ ).

Description	Pre Test Mean	Post Test Mean	df	t value	Standard error of difference	P value
Flexibility	9.33	12.33	14	6.7082	0.447	0.0001*
MMT	3.73	4.40	14	5.2915	0.126	0.0001*

\* Statistically significant

**Table 1:** Flexibility scores & MMT Pre and Post test values:



**Figure 1:** Graph showing Flexibility & MMT Pre and Post test values:

## DISCUSSION

This study was aimed at finding out how overweight people lack flexibility in their body and to find out the effectiveness of dynamic core stability exercises and stretching in improving the flexibility.

The datas were analyzed using mean and paired 't' test for group significance. The results clearly states that the person who had higher BMI have lack of flexibility especially in their hamstring group of muscles and lack muscle power in their abdomen core group.

Lack of flexibility was improved by giving stretching exercises and muscle was strengthened by the effects of dynamic core stability exercises <sup>8,9,10</sup>.

## CONCLUSION

The study concludes that the individuals having higher BMI lack body flexibility. Dynamic core stability exercises and static hamstring stretching were found to be useful in improving the muscle power and flexibility.

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