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Research Report

CORRELATION OF FUNCTIONAL CAPACITY WITH LOW BACK PAIN IN THE INDIVIDUAL BETWEEN THE AGE GROUP OF 25-35 YEARS

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ABSTRACT

Aim: Correlation of functional capacity with low back pain in the individuals within the age group of 25-35 years.

Objective:

1. To assess low back pain by using modified Oswestry low back pain scale.
2. To assess functional capacity by using six minutes walk test.
3. To find the correlation of functional capacity with low back pain in the age group of 25-35 years.

Conclusion: This study concluded that there is a negative correlation between functional capacity with low back pain within the age group of 25-35 years.

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INTRODUCTION

Low back pain is a leading cause of disability. It occurs in similar proportions in all cultures, interferes with quality of life and work performance, and is the most common reason for medical consultations⁴

Common causes low back pain are

1. Traumatic it can be a sprain, strain, vertebral fracture
2. Discogenic low back pain is due to intervertebral disc
3. Structural defect mainly in the vertebral spine example scoliosis, spina bifida, sacralisation
4. Functional defects it is due to wrong postural attitude, degenerative disc disease, metabolic disease, neoplastic disease, contracture at the hip or knee, limb length discrepancy⁴.

Low back pain is an extremely common problem that most people experience at some point in their life. While substantial heterogeneity exists among low back pain epidemiological studies limiting the ability to compare and pool data, estimates of the 1 year incidence of a first ever episode of low back pain range between 6.3% and 15.4%, while estimates of the 1 year incidence of any episode low back pain range between 1.5% and 36%. In health facility or clinic-based studies, episode remission at 1 year ranges between from 54% to 90%⁵ Employment⁵.

Symptoms related to low back pain are,

1. Pain in the back which can radiate to lower part of leg,
2. Muscle spasm,
3. Tenderness,
4. Tingling, or Numbness which can radiate to buttocks or lower leg,
5. Stiffness in low back.
6. Fatigue of low back muscles^{4 16}.

Functional capacity is the ability of a person to perform aerobic work during maximum oxygen intake¹³.

Factor affecting functional capacity are pain, lifting activities, postural intolerance, and repetitive movement¹.

Back muscles are important to the stability of the lumbar spine. Muscle fibre composition may give some indication of the functional capacity of these muscles¹⁶.

In a patient with the lumbar disorder, pathological changes and selective atrophy of type 2 fibres are seen. This review explores the relationship between muscle fibre composition and functional capacity of patient¹⁶.

Six min walk test is a simple, low-tech, safe, and well-established self-paced assessment tool to quantify functional exercise capacity. This test measure the distance that a patient can quickly walk on a flat, hard surface in a period of 6 minutes^{13 14}.

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The 6MWD is increasingly being used in routine clinical practice because it provides useful information on the daily physical performance of the healthy individual.

The 6MWD has become a standard tool in clinical practise and research to assess exercise performance¹⁵.

Need of Study

Functional capacity reflects the ability to perform activities of daily living that require sustain aerobic metabolism¹⁵. Functional capacity is affected by pain, lifting activities, postural intolerance and repetitive movement.

Low back pain affects functional capacity¹. But to our knowledge there are very scarce literatures showing the correlation of functional capacity with low back pain. Hence this study was conducted to find out the correlation of functional capacity with low back pain in the individuals within the age group of 25-35 years.

Aim

Correlation of functional capacity with low back pain in the individuals within the age group of 25-35 years.

Objective

1. To asses low back pain by using modified oswestry low back pain scale.
2. To asses functional capacity by using six minutes walk test.
3. To find the correlation of functional capacity with low back pain in the age group of 25-35 years.

Hypothesis

- Experimental Hypothesis: There will be correlation between functional capacity and low back pain
- Null Hypothesis: There will not be correlation between functional capacity and low back pain

MATERIALS AND METHODOLOGY

- Type of Study: Correlation study
- Tool Used: Bp apparatus, stethoscope, cones, measuring tape, pulse ox meter, chair, stopwatch.
- Location: metropolitan city
- Duration of Study: 6 months
- Sample Selection: convenience sampling
- Sample Size: 30

Inclusion Criteria

- Males with chronic nonspecific low back pain between the age group 25-35 yrs
- Willing to participate in the study

Exclusion Criteria

- Any lower limb or spine fracture.
- Any neurological condition.
- Any acute cardiorespiratory condition.
- Any systemic illness
- Psychiatric patient

Materials Used

1. Weighing machine.
2. Measuring tape.
3. Sphygmomanometer.
4. 20-meter hallway.
5. 2 bright colored cones.
6. Stopwatch.
7. Borg scale.

Procedure

A proper consent from the patient was taken by filling the consent form. Then the low back pain was assessed by using modified oswestry scale. After that functional capacity was assessed by six min walk test.

Location

6mwt was performed indoors, along a long, flat, straight, enclosed corridor with a hard surface that is seldom traveled. The walking course was 20 m in length. The length of the corridor was marked every 2 meters. The turn around points were marked with a cone.

Preparation

Comfortable clothing was worn. Appropriate shoes for walking were worn. A light meal was accepted before early morning or early afternoon tests. Before preceding to the test. The subject was at rest in a chair, located near the starting position, for at least 10 minutes before the test started. During this time, the subject was checked for contraindications. Pulse and blood pressure was measured. The subject then stood and rated their baseline dyspnea and overall fatigue using the modified Borg scale. The lap counter was set to zero and the timer to 6 minutes.

Instructions to the Subjects Were As Follows

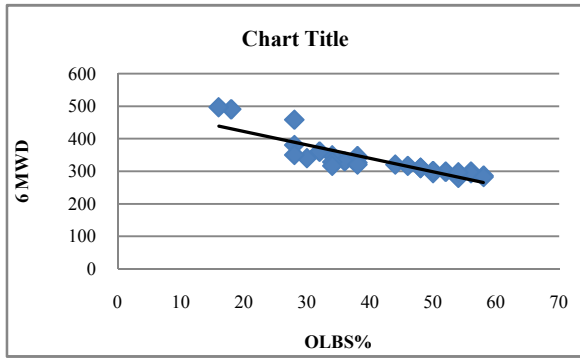
“The object of this test is to walk as far as possible for 6 minutes. You will walk back and forth in this hallway. Six minutes is a long time to walk, so you will be exerting yourself. You will probably get out of breath or become exhausted. You are permitted to slow down, to stop, and to rest as necessary. You may lean against the wall while resting, but resume walking as soon as you are able. You will be walking back and forth around the cones. You should pivot briskly around the cones and continue back the other way without hesitation. Now I'm going to show you. Please watch the way i turn without hesitation .As soon as the subject was ready the lap counter and timer was started. Recording the number of laps from the counter (or tick marks on the worksheet). recording the additional distance covered (the number of meters in the final partial lap) using the markers on the wall as distance guides. Calculating the total distance walked, rounding to the nearest meter, and recorded it on the worksheet.

Data Analysis

Demographic Data

	MEAN	SD
AGE	33.6	±3.26
BMI	31.09	±2.39
HEIGHT	157.33	±3.71
WEIGHT	76.76	±5.58
N=30		

Graph: Correlation with Functional Capacity and Oswestry Low Back Pain Scale



Table

	MEAN	SD
OLBS%	41.6	±11.87
6MWD	329.73	±51.44

P value<0.05

Inference: The above data was analysed by using Pearson’s correlation coefficient and it shows negative correlation between functional capacity and low back pain($r=-0.87$)

DISCUSSION

The aim of this study was a correlation of functional capacity with low back pain in the individuals between the age group of 25-35 years. Functional capacity integrates efforts of respiratory, cardiac and skeletal muscle system to dictate individual functional capacity¹⁵.

Low back pain affects the functional capacity of the patient. Six min walk test is a simple, low-tech, safe, and well established self-paced assessment tool to quantify functional exercise capacity¹³. Hence this study was conducted to find the correlation of functional capacity with low back pain in the individuals between the age group of 25-35 years.

A correlation study was conducted for a duration of 3 months in a metropolitan city. 30 low back pain patient within the age group of 25-35 years were selected by using convenience sampling. Informed written consent was taken. Low back pain was assessed by modified oswestry low back pain scale. Functional capacity was assessed by six min walk test. Then the data collected was statistically analyzed. Pearson’s correlation coefficient test of significance was used.

Results of our study showed that there is a negative correlation between functional capacity and low back pain. Pearson’s correlation coefficient(r) is -0.87 i.e it lies between -1 to 0.

The test was significant which showed that there is a correlation between functional capacity with low back pain. This indicates that functional capacity and low back pain are inversely proportional to each other.

This could be because in a patient with lumbar disorder, pathological changes are seen, and the strength of lumbar muscles decreases which is directly proportional to the functional capacity of the patient. So reduce strength will reduce the functional capacity of the patient. Another factor is a pain, which interferes with the daily activities of life of the patient which is crucial to functional capacity of the patient¹.

Reduce strength will lead to pain, which will reduce the functional capacity of low back pain patient.

Therefore, as the low back pain increases, the functional capacity decreases.

Following are few studies supporting our studies showing a correlation of functional capacity with low back pain.

S Lucilana Maria Sales *et al* conducted a study on comparative analysis of functional capacity among women with fibromyalgia and low back pain. They found that females with fibromyalgia had the poor functional capacity as compared to a female with low back pain.

Gross DP, PHD conducted a study on factor influencing the result of functional capacity in low back pain. The result indicate that physical factors, the perception of disability and pain intensity affect the functional capacity in low back pain patient.

Joseph Carylton conducted a study on the relationship between muscle fibre composition and functional capacity of back muscles in healthy subjects and patient with back pain. The result indicates that functional capacity of low back muscles in back pain patient is less as compared to a healthy individual.

S.Browwer conducted a study on Test – Retest reliability of functional capacity evaluation in patient with chronic low back pain. IS Test showed an acceptable test – retest reliability based on Kappa value and percentage of absolute agreement.

CONCLUSION

This study concluded that there is a negative correlation between functional capacity with low back pain within the age group of 25-35 years.

Clinical Implication

- Exercise session like group exercise can be given to improving the overall fitness, cardiovascular endurance, and functional capacity of the patient.
- Strengthening exercise of back muscle should be given.
- Awareness program regarding low back pain affect the functional capacity of low back pain patient.
- Activities and exercise which improve cardio vascular endurance and functional capacity of the low back pain patient.

Limitation and Suggestion

Limitation

Small sample size was taken

Suggestion

- Larger sample size can be taken.
- This study can further be done to correlate the functional capacity with low back pain in another age group.

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