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Effects of Weight Bearing Exercises on Spastic Hemiplegic Patients

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Abstract

Stroke also referred to as cerebrovascular accident (CVA) occurs due to the disturbance of blood flow to the brain. This disturbance can be of two ways either the blood supply was insufficient aka stoppage of blood supply which leads to ischemic stroke (the most common type) and the other is where the blood vessel is ruptured which leads to hemorrhagic stroke. No matter which kind of stroke the person underwent they will suffer from loss of function due to lack of oxygen and lack of glucose. Weight bearing exercises play an important role in normal individuals and not just stroke patients. These exercises help to keep our body healthy; they have a positive effect on our bones and muscles. Through this study we aimed to find the effect of weight bearing exercises in people having stroke. The need of the study is to help understand role of WEB in stroke and how it can be in cooperated in their exercise as well as daily regime. We used timed up and go test, berg balance scale to assess the effectiveness of WBE on balance and PPE scale to see their affect on upper limb disability. A total of 30 were taken as sample size.

Keywords: Stroke, CVA, Weight Bearing Exercises.

Introduction

Stroke also referred to as cerebrovascular accident (CVA) occurs due to the disturbance of blood flow to the brain. The person will suffer from loss of function due to lack of oxygen and lack of glucose. There are usually 3 arteries which are associated with stroke namely Middle Cerebral Artery (MCA), Anterior Cerebral Artery (ACA) and Posterior Cerebral Artery (PCA). ^{(1)(pg 645-650)}

Weight bearing exercises will be inculcating in the regime of our patients is; exercises in quadruped position, exercises in modified plantigrade position, exercises in kneeling and half kneeling, stretching in standing/ sitting, changing position from sitting to standing and vice versa,

shifting of weight. Through these exercises we plan on decreasing spasticity and further see the impact of decreased spasticity on balance via berg balance scale and timed up and go test. Apart from this we will assess the disability remaining in the upper limb through PPI disability index for upper limb as we know that patients suffering from stroke spend their life suffering because of the residual effects post stroke. ⁽²⁾

This study focuses on decreasing spasticity in stroke patients with the help of weight bearing exercises which can further lead to improved balance in these patients and decreased disability in upper limb.

Need of Study

This study will help to know the significance about weight bearing exercises in a particular area which can further be inculcated in the rehabilitation for better results. Through this study we can innumerate the various effects whether beneficial or otherwise of the weight bearing

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exercises on balance via berg balance scale and timed up and go test while on the other hand we will also be looking for the disability remaining in the upper limb as it is been clear that there are residual effects of stroke in patients post stroke due to which they are not able to perform fine movements which are basic in daily living like buttoning up their shirts or tying their trousers. Hence the need of this study is not only for research but to also improve the basic daily living activities in spastic hemiplegic patients suffering from stroke. We might also be able to see some improvement in the gait pattern as exercises in weight bearing positions like plantigrade/ modified plantigrade help to bring the muscle tone down which helps the muscle to get out of their contracted state.

Hypothesis

Null hypothesis- there is no significant effect of weight bearing exercises on balance and spasticity in spastic hemiplegic patients.

Alternate hypothesis- there is significant effect of weight bearing exercises on balance and spasticity in spastic hemiplegic patients

OBJECTIVES

To determine the effect of weight bearing exercises on spastic hemiplegic patients.

AIM OF THE STUDY

To determine the effect of weight bearing exercises on spastic hemiplegic patients.

Methodology

INCLUSION CRITERIA

1. Patient giving their consent
2. Male and Female patient included
3. Patient with ischemic stroke
4. Patient in the age group 50-65 years

EXCLUSION CRITERIA

1. Traumatic injuries
2. Patients under 50 years and above 65 years

3. Patients in Intensive Care Unit

4. Differential diagnosis from stroke

PROCEDURE

The project will be explained to the subjects if they come under the inclusion criteria, after which a consent form will be given to them. The subjects will be asked to fill the questionnaires and the data will be analysed. We will educate the patient at every step on how to perform and the significance of exercises and scales we are opting for. It will be essential to develop a repo with the patient so that you both can communicate easily and the whole process follows through smoothly. The data collection will be done over the span of 6 weeks with the help of sales we opted for. We will be checking berg balance scale, timed up and go test and PPI disability index in upper limb before the beginning of these exercises and at the end of the 6 weeks in order to conduct an analysis for the understanding of the result we will be receiving through the study we are conducting.⁽³⁾

DATA ANALYSIS

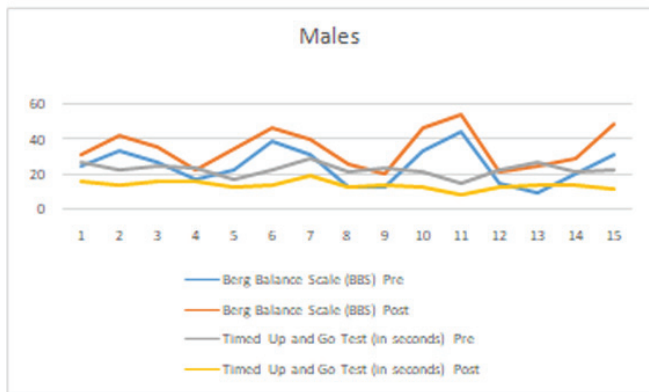
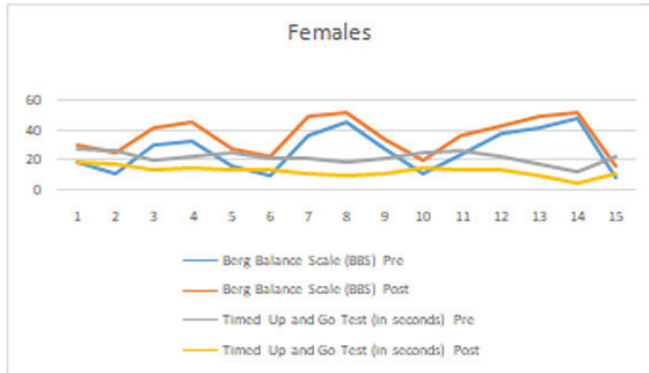
The analysis of the data was being done on 30 patients by using various scales such as timed up and go test, berg balance scale and PPE upper limb disability scale to examine balance and disability in stroke patients. Time span taken for this analysis was over 1 month.

Pre and post evaluation were made which helped us to know the improvement in the balance and disability of the patients. Data was collected on the basis of balance and disability (hand movement) measured by TUG and BBS (pre and post value), PPE (pre and post value).

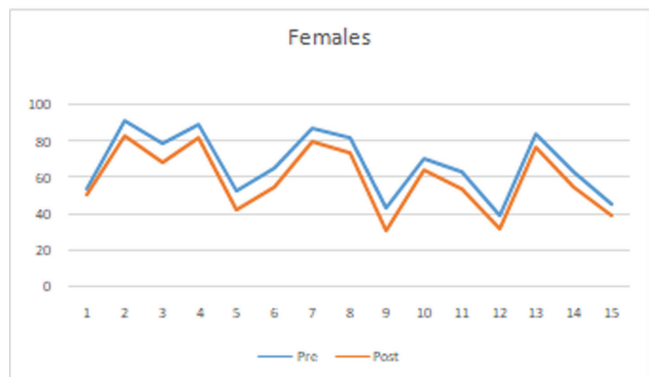
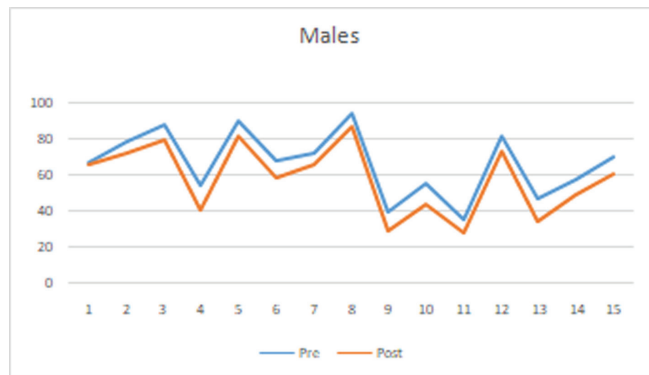
The data analysis was done using descriptive analysis mean standard deviation on MS Excel.

Results

The data which was collected was analysed and T test values were found. The t value for TUG and BBS were -1.43 and for PPI t value is -1.70. Since t value is below 0 the study's significant.



Balance test pre and post in males and females



PPE for upper limb pre and post in males and female

Discussion

The patients with stroke spend their life suffering because of the residual effects post stroke. The study will be able to identify the outcome of patient following weight bearing exercise and those not following weight bearing exercises. This can allow for monitoring of techniques or modification treatment if required, according to the severity of symptoms. It will also help to increase ethical awareness about the effectiveness of the weight bearing exercise.^(5,6)

Through the years there have been many studies conducted which have focused on how weight bearing exercises affect people with stroke. Some of these studies were based completely on the female group so in order to check if there were any difference in the result of male and female we generated two separate graphs one for male other for female to get to know if there was any difference in result in male and female groups. Our study was well supported by the article about effects of weight bearing in stroke by using weight bearing exercises and PNF techniques in which it was proven that our topic does have a positive impact on patients balance.⁽⁷⁾

Even though we don't have enough facilities to have high technology robot assisted movements performed there have been recent researches regarding this area which gives us an edge as it reduces the therapist effort while still giving the absolute best assistance to the patient as well. There was another study which compares the effect of movement with mobilization and weight bearing exercises which shows ample amount of positive effect on balance and proprioception which helps during gait.⁽⁸⁾

Conclusion

Through the years there have been many studies conducted which have focused on how weight bearing exercises affect people with stroke. In this study we could see the positive impact on both disability and balance through WBE.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Amity Institute of Physiotherapy, Amity University, Noida

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