Effectiveness of 45 Minutes' Walk with 15 Minutes Ankle Toe Movement to Reduce Random Blood Sugar Level in Type 2 Diabetes Adults - An Experimental Study

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ABSTRACT

Background: Diabetes is one of the chronic and world wide clinical condition. It occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Type 2 Diabetes (T2D) is formerly known as adult-onset diabetes. It is a form of diabetes mellitus that is characterized by high blood sugar, insulin resistance, and relative lack of insulin. While we walk or doing ankle toe movement continuously the blood sugar utilize to energy consumption by the muscle work in our leg.

Aim & Objective: To find out the effectiveness of 45 minutes walk with 15 minutes ankle toe movement to reduce random blood sugar level in type 2 diabetes adults.

Methodology: 30 subjects of age group 25- 45 years were selected, who fulfilled the inclusion Criteria. Out of the 50 patients 30 subjects who were type 2 diabetes and also those who find by Random Blood Sugar (RBS) level between 250 – 300 mg/dl & scored between 25 – 30 in BMI. 30 subjects who selected were treated 45 minutes walk with 15 minutes ankle toe movement for a period of 24 weeks. The pre-test and post-test measurement was taken by using of Digital Glucometer (Accu-Chek Active).

Result: The pre-test and post-test mean values of RBS level was analyzed using the paired 't' test. For 29 degrees of freedom and 5% level of significance, the table's' value is 1.699 and calculated 't' value 3.06. Since the calculated' value was greater than table's' value null hypothesis is rejected.

Conclusion: This study it can be concluded that 45 minutes walk with 15 minutes ankle toe movement for a period of 24 weeks to reduced random blood sugar level in type 2 Diabetes adults.

Keywords: Diabetes, Type 2 Diabetes, RBS, Walk, Ankle Toe Movement, Adults

Introduction

Diabetes is one of the chronic and world wide clinical condition. Diabetes is a kind of endocrine disease and insulin related problem. It occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Type 2 Diabetes (T2D) is formerly known as adult-onset diabetes. It is a form of diabetes mellitus that is characterized by high blood sugar, insulin resistance, and relative lack of insulin. 90% of diabetes cases are type 2 Diabetes only. Type 2 diabetes is largely preventable by staying at a normal weight, exercising regularly, and eating a healthy diet (high in fruits and vegetables and low in sugar and saturated fats). Treatment involves exercise and dietary changes. In 2014, 8.5% of adults aged 18 years and older had diabetes. In 2019, diabetes was the direct cause of 1.5 million deaths and 48% of all deaths due to diabetes occurred before the age of 70 years. Another 460 000 kidney disease deaths were caused by diabetes, and raised blood glucose causes around 20% of cardiovascular deaths. While we walk or doing ankle toe movement continuously the blood sugar utilizes to energy consumption by muscle work. The

activation of calf muscle in long period its utilize the high energy by Glucose metabolism. Since the second month of 2023, I am exploring type 2 diabetes physiotherapy treatment. I have described three types of studies in it till now. This is my first study. Hence this physiotherapy study is called SRY Physio Protocol I by our fellowships.

Methodology

A total number of thirty subjects were selected from Namakkal District by purposive sampling method by who fulfilled the inclusion criteria. The study was pretest and post-test for a single group experimental study in nature. The treatment was conducted for a period of 24 weeks. The subject was selected by using purposive sampling method. Pretest taken using RBS level considered and assigned to 45 minutes walk with 15 minutes ankle toe movement. The Inclusion Criteria are The patients age between 25 – 45 years, Only adult patients have selected in this study, The subjects should followed the South Indian food style with 2000 to 2500 kcal or food calories per day that monitored by Samsang Health App, 25 – 30 score in BMI and 250 - 300 mg/dl in RBS level. The Exclusion Criteria are the score above 30 in BMI and above 300 mg/dl in RBS level, Uncooperative patients and other pathological or associated problems. Before the patient treatment all the subjects were explained about the study and the procedure to be applied. They were asked to inform if they any discomfort during the course of study. Written consent was obtained from the subjects**.**

Procedure

The person is made to stand on weight scale for measuring weight. And take height measurement by stadiometer on same time. Then calculated the BMI score by using of digital calculator. The BMI score should be 25 – 30. And RBS level should be find by using Digital Glucometer (Accu-Chek Active) before starting the study. The exercise program for all days of 24 weeks. Same measurement taken after twenty four weeks exercise program for RBS level in type 2 Diabetes adults.

- **45 Minutes' Walk:** All subjects should check vital signs before starting program. Only stable persons should involve in to our study. The duration of walks is monitoring by stop watch. And all subject must involve the program by evening for twenty four weeks. Everyday all subjects must check their vital before and after exercise program. If anything, immediately the subject should be hospitalized. After completed the 45 minutes' walk all subjects should take rest for 5 Minutes.
- **15 Minutes Ankle toe Movement:** All subjects are made to lying on bed and check vital signs before and after exercise in everyday. All should be normal.
  Patient Position: Relaxed Supine Lying
  Duration: 15 Minutes

Data Analysis

Rbs Level

Mean values (mg/dl)		**Calculated**	**Table**	**Level of**
Pre test	**Post test**	**'t' value**	**'t' value**	**Significance**
272	**138**	**3.06**	**1.699 (one-tail)**	**P < 0.05 Significant**

The pretest and posttest mean values of RBS level was analyzed using the paired 't' test. For 29 degrees of freedom and 5% level of significance, the table 't' value is 1.699 and calculated 't' value 3.06 Since the calculated 't' value was greater than table 't' value null hypothesis is rejected.

Result

This study was conducted on 30 subjects. To find out type 2 Diabetes was used by RBS level and used was short version. The pretest and posttest mean values of RBS level was analyzed using the paired 't' test. Since the calculated 't' value was greater than table t' value null hypothesis is rejected. The overall result of this

study is 45 minutes walk with 15 minutes ankle toe movement for a period of 24 weeks to reduce RBS level in type 2 Diabetes Adults.

Discussion

All subjects are taking South Indian diets and 2000 - 2500 kilo calories every day. They are from Namakkal District and followed South Indian food style. The efficacy of 45 minutes walk with 15 minutes ankle to movement to utilized calories for muscle action from body. Approximately 350 to 550 Kcal or food calories burned every day the result of protocol that calculated by Samsang Health App.

Outcome measures included the RBS level find by Digital Glucometer (Accu-Chek Active) which was measured prior to treatment (pretest) and at the end of 24 weeks of treatment (posttest). In this study aim was to find out the effectiveness of 45 minutes walk with 15 minutes ankle toe movement to reduce random blood sugar level in type 2 diabetes adults. The overall effectiveness on RBS level was analyzed by paired 't' test after 24 weeks treatment which shows $p < 0.05$ which is significant.

From this study it can be concluded after the exercises program the RBS level is reduced followed by 24 weeks among type 2 Diabetes adults.

Conclusion

The aim of study is found out the effectiveness of 45 minutes walk with 15 minutes ankle toe movement to reduce random blood sugar level in type 2 Diabetes adults. 50 numbers of type 2 Diabetes adults were selected and assessed. Those who had BMI score between 25 – 30 and RBS level between 250-300 mg/dl. Out of 50 members 30 subjects were selected. They received the exercise program.

The BMI score and RBS level was measured before and after treatment session (24 weeks). Pretest and posttest values of the study was collected and assessed for significant difference and their results were analyzed by using paired 't' test.

This study concluded that 45 minutes walk with 15 minutes ankle toe movement to reduce random blood sugar level in type 2 diabetes adults**.**

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