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RESEARCH ARTICLE

ONE YEAR OF HIGH INTENSITY EXERCISE TRAINING ON POST PARANDIAL BLOOD SUGAR AND WC ON TYPE II DIABETIC

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ABSTRACT

An increasing of type II diabetic coupled with global prevalence an increased longevity is an alarming health care. Physical exercises with good adherence improves glycemic control and quality of life of diabetic subject.

Aims and Objectives of this study was to analyse the impact of NIE resisted exercises on PPBG and WC in a one year follow up

Materials and Methodology: 61 year old male engineer on 20 units of insulin therapy for 15 year (Type II Diabetic) was treated with HIE exercises during the period from 23.12.2016 to 20.12.2017 with weekly twice frequency

Results of pre and post PPBG and WC were recorded and analyzed statistically with P<.001

Conclusion: An improved glycemic control with HIE using PPBG was the core outcome of this presentation.

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INTRODUCTION

An increased diabetic prevalence and the role of physical exercises in diabetic care are to be researched more with evidence. Regular exercises an effective strategy for the prevention and treatment of type II diabetics. ADA advocates 150 minutes of vigorous exercises per week. While therapeutic effects of low to moderate intensity exercises such as walking, jagging or cycling for >30 minutes were recorded to improve glycemic control (Colberg *et al.,* 2010). High intensity exercise may be more effective in improving glycemic control among type II diabetic mellitus (Boule *et al.,* 2001). High intensity interval training which involves repeated bursts of vigorous exercises interspersed with periods of rest was demonstrated in patients with type II diabetic with an improved their outcome but potential benefits on disease parameters have yet to be established (Earnest 2009). This original presentation aims to analyse the impact of single but high intensity resisted exercises using PPBG and WC on a type II diabetic subject on insulin therapy

Aims and objective: of this original case presentation was to evaluate the impact of HIE on PPBG and obesity on a one year follow up on a type II diabetic on insulin therapy

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MATERIALS AND METHODOLOGY

Background Information

Mr. XXX, 61 year, Male type II diabetic subjects on insulin therapy for 15 years was treated with HIE during the period from 23.12.2016 to 20.12.2017 with weekly twice frequency at Chennai. His BMI – 26 K/m^2 WC – 100 cm

Procedure

This study subject was treated (After obtaining his consent and ethical committee approval) with 15 number of high intensity resisted exercises with each session lasting for 15-20 minutes, with frequency of twice a week no hypoglycemic spell were recorded but profuse sweating was noted mostly with each session.

Subject has reported mild body pain and generalized soreness for 48 hours post exercises. His PPBG and WC was taken first at 4 p.m (Had his lunch by 2 p.m) after a bout of HIE on 23.12.2016 (Pre PPBG) and subsequently getting treated up to 20.12.2017, where PPBG and WC was taken by 4 p.m post HIE exercises (Post – PPBG). Both the recorded values of PPBG and WC were recorded and analyzed with due statistical means as below:

Table 1. Of results on pre and post PPBG with NIE using student t test

Parameter	Mean		SD	SE	t	p
PPBG mg/ 100 ml	Pre	203	6.35	3.66	3.05	<.001
	Post	192				
WC cm	Pre	100	4.62	2.66	3.07	<.001
	Post	92				

DISCUSSION

The following questions were to be answered with outcome of this study results using scientific evidence as below:

- How HIE differ from other modes of physical exercises?
- What is the impact of an obesity with HIE?
- One year of HIE how much to except on PPBG to be lowered?
- Does the impact of results on PPBG influences the QOL of the subject?

Little *et al.,* 2011 have recoded low volume, high intensity internal training reduces hyperglycemia and increase muscle mitochondrial capacity in type II diabetic mellitus among 8 type II diabetic subjects in two weeks period of six sessions of low volume HIE. As post parandial hyperglycemia plays a predominant contributing role in diabetic complications were well evidenced (Ceriello 2003) as supported by these studies, this study subject with high intensity exercises of single bout has shown a lowered PPBG benefits with improved glycemic control and skel*et al.,* muscle metabolism (Gibala *et al.,* 2006).

- HIE may reduce post exercise rise in plasma glucose (Marlis *et al.,* 1991) and reduces the acid base balance perturbations in normal subjects (Harmer *et al.,* 2000).
- HIE training did not improve A_1C but improves glycemia and acid base regulation as recorded with 7 weeks of thrice weekly HIE among eight type I diabetic subjects in Sydney (Harmer *et al.,* 2007).
- Among eight type I diabetic subjects in western Australia intermittent HIE fro 20 minutes of 11,4 sec maximal sprints repeated every 2 minutes have recorded with IHIE does not increase the risk of early post exercise hypoglycemia (Guelfi *et al.,* 2005) with metabolic and hormonal responses to HIE, an elevated catecholamine and growth hormone level might contribute to preventing the decline in blood glucose levels during early recovery. Since these hormones stimulate increased hepatic glucose production (Purdon *et al.,* 1993) and inhibit insulin medicated glucose uptake (Jessen *et al.,* 2007).
- An improved waist circumference as proved statistically in the table concurs with as obesity was considered as a major component to prevent complications associated with diabetes (Rexrode *et al.,* 1997).
- Chronic hyper glycemia can cause damage to kidneys, eyes, nerves, heart and blood vessels (Yki – Yarvinen 1998) while lowered PPBG in one year therapy with HIE this study subject was shielded with complications linked with obesity and chronic hyperglycemia were the key components as outcome of this research presentation.

Critical Analysis of this Study Findings

- With hba_1c is regarded as a major measurement of glycemic control this study analyzed using PPBG
- Subjects regular walking, level of other physical activities were not discussed
- Environmental influences with job, stress, family and dietary measures were not studied

Conclusion

An improved PPBG with NIE as demonstrated in this presentation with evidence can be extended with larger sample size and including other measurable parameters such as hba_1c and BMI for further strong scientific validity.

Limitations of this Study

Includes dietary measures were not analyzed his level of routine other physical activities were not studied

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