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Research Article

EFFECTS OF AEROBIC EXERCISES VERSUS AUTOGENIC RELAXATION TECHNIQUES IN HYPERTENSION

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ABSTRACT

Aim: to compare the effect of aerobic exercises and Autogenic relaxation techniques in hypertension and to find out which one is more effective. **Methodology:** 60 Patients; group 1(Aerobic):30 patients, group 2 **(Autogenic Relaxation):** 30 Patients **Result: Significant** changes with aerobic exercises as well as autogenic relaxation techniques are useful in lowering Blood Pressures. Although Autogenic Relaxation shows more slow and gradual effects to gain benefit. **Conclusion:** daily basis the society can be benefited if the techniques are used by hypertensive patients regularly and for longer Period of time.

INTRODUCTION

Blood pressure and arterial tension are commonly used as synonyms in medicine, although they do not mean exactly the same. The blood flows with a force that pushes against the wall of the arteries. That force is called blood pressure. Arterial tension is a form of potential energy originally coming from heart contraction, which is available to make blood flow against peripheral resistance. By convention, it is measured in terms of mm of mercury, which represent how high the mercury column is raised by the force of the arterial system.[1]

An increased sensitivity threshold of these baroreceptors would cause them to operate at higher pressures, leading the system to maintain higher pressure levels, and longer-lasting. If this situation becomes chronic, resulting arteriolar wall changes would raise vascular resistance, worsening symptoms and increasing baseline pressure[1]Hypertension which is a major risk factor for cardiovascular disease, remains highly prevalent in both industrialized and developing countries [2]

Many well-controlled studies support the notion that regularly performed chronic exercise decreases blood pressure in patients with hypertension compared to non exercising control subjects. The reduction is about 8-10 mm Hg for systolic and 7-8 mm Hg for diastolic blood pressure [2]It is widely accepted that a sedentary lifestyle increases the risk for hypertension whereas increased occupational or leisure time physical activity is associated with lower levels of blood pressure. The seventh report of joint national committee on prevention, detection, evaluation and treatment of high blood pressure proposed that increased physical activity is now strongly recommended as part of the lifestyle modifications along with an adjunct to pharmacological therapy [3]

Several non-pharmacological therapies (weight loss, reduced salt intake, moderate alcohol consumption and aerobic exercise) are recommended as means to prevent or treat hypertension. Among them, aerobic training is unique because it is not a nutrition based strategy. [2]Arterial baroreflex plays an important role in the regulation of the cardiovascular system. During spontaneous variation of the blood pressure, stimulation or deactivation of the arterial baroreceptors located in the carotid sinus and aortic arch causes reflex bradycardia and tachycardia respectively [4]

Previous studies have demonstrated that regular exercise causes significant changes in baroreflex control of heart rate in experimental hypertension[4]. It is also stated that exercise training improves baroreflex control of heart rate during the increase and decrease of blood pressure in spontaneously hypertensive rats [4]Also aerobic Exercises[5] are form of exercises including 30 to 40 minutes of series of exercises including warm up and cool down.

Autogenic Training takes you through a series of validated exercises and trains you to consciously control your Autonomic Nervous System which governs the functioning of our heart (cardio-vascular), lungs (respiratory), stomach and bowels (gastrointestinal and excretory system) and impacts on the

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functioning of our muscles, brain, nerves, blood vessels, biochemical responses and immune system[6].

Through a state of passive observance of bodily signals as a form of biofeedback, Autogenic Training trains us to consciously direct our brain, using passive instruction, to 'turn down' our SNS and 'switch on' our PSNS, allowing the body's natural repair and regulation mechanism, including the immune system, to strengthen[6].

Subjects And Methods

Patients were given full explanation of the study to be performed. They were also explained the risks and benefits of the study. Only those patients were recruited who gave voluntary informed written consent. Mild to moderate hypertensive patients i.e. stage-I and stage-II hypertension were distributed into three groups by randomization. Randomization was concealed by sequentially numbered opaque sealed envelopes. Each patient was asked to rest for 10 minutes as soon as the patient came to the department. Resting BP and HR was measured and noted on the assessment sheet in Day 1 column and all the subjects were asked to sign the informed consent form before starting the treatment.

Protocol

Group A: Aerobic Exercise Training: Aerobic exercise[5] training is dependent on three variables i.e. Intensity, frequency and time.[7] To decide the INTENSITY of the aerobic exercise THR (target heart rate) should be reached. It was calculated by using the Karvonen's formula. Find RHR (resting heart rate), MHR (maximal HR) = 220-age, HRR (heart rate reserve) = MHR-RHR, Find 60-70% of HRR [10], THR= RHR+ (60-70%) HRR. Hence a range of THR will be obtained. The patient was explained that he/she will be taught warm up exercises, aerobic exercises and cool down exercises. The patient will have to perform each of the three during every session. WARM UP: The warm up session was done for 10 minutes. It includes various repetitive motions such as: In standing- Shoulder flexion-extension, Shoulder abduction-adduction, Trunk rotation. In supine - knee flexion/extension, alternate unilateral SLR. AEROBIC TRAINING SESSION: It was for walking the hallway 20 minutes. The speed was such that the patient should walk within the target heart rate range (THRR). HR is measured every 5 minutes during the patient is walking. If the patient was not able to reach the THRR the patient was given verbal commands to speed up. COOL DOWN SESSION: It was for 5 minutes. It included slow repetitive motions such as Shoulder flexion-extension, Shoulder abduction-adduction and Trunk rotation. Duration: 35 minutes. Frequency: 5 days/week.

Group B- Autogenic Relaxation Techniques: After 10 minutes of rest as the patient comes to the department, Blood Pressure and Heart rate measured for the patients. **Autogenic Relaxation Technique:** The Patient is asked to sit comfortably in Chair or Lye down as Suitable. The room is darkened as much as possible.[5]Now the patient is asked to close eyes and follow commands given by the Therapist: Heaviness exercise, Warmth exercise, Breathing exercise, Abdomen exercise, Cardiac exercise, Forehead exercise.

Each exercise is carried out with its various components (e.g. heaviness and warmth and perceiving one's breathing) lasting a total of 3 to 5 minutes. They are carried out seated (or as the case may be lying down) with closed eyes. The autogenic training should take place in a darkened room that is as quiet as possible. Frequency: 5 days/week-twice in a day (Morning and evening). Heart Rate, Blood Pressure, Rate of perceived Exertion, Hospital Anxiety and Depression Scale will be measured for all the patients of both groups each on day 1 and day 30th

DISCUSSIONS

In the present study it was found that autogenic relaxation technique for patients undergoing stress produced a significant change in Blood Pressure, Heart Rate, RPE and HADS variables. In addition, amelioration of psychological and somatic complaints in those who practiced relaxation techniques confirms the previous studies that autogenic relaxation therapy provides definite help to patients having high Blood Pressure.

Considering the involvement of stress, as one of the predominant associated factor with BP, we evaluated Systole and Diastole BP levels in all patients before and after both types of treatment. Very often stress and high BP level is considered synonymous. This study revealed that with the help of the relaxation technique in the first 2 weeks, there was not a substantial change in the BP, HR, RPE or HADS levels but after 2 weeks, we noticed significant results of these techniques. There was 5 % relief observed in Systolic BP variable for the Group B patients compared to which the Group A patients showed 4% relief. There was 5 % relief observed in Diastolic BP variable for the Group B patients compared to which the Group A patients showed 1.3% relief. There was a significant 4% relief was observed in HR for the Group B patients while the Group A patients showed only 1.25% relief. The RPE (Rate of Perceived Exertion) variable showed a relief of around 41% in Group B patients while the Group A patients showed only 29% relief. The final variable Hospital Anxiety and Depression scale (HADS) which showed the maximum relief in Group B patients which was 30% compared to only 10% relief observed in Group A patients.

Considering the test results and the relief observed, the autogenic relaxation proved very effective and gave good results. The only factor which needs to be considered for applying autogenic relaxation technique is the duration. The improvements were gradual in Group B patients who had undergone autogenic relaxation techniques. As we can observe from the graphs and the tabular data, for first 2 weeks there was no significant improvement by autogenic relaxation technique but after 2 weeks this technique produced very good improvement in all the variables gradually, considered to evaluate the health of the patients.

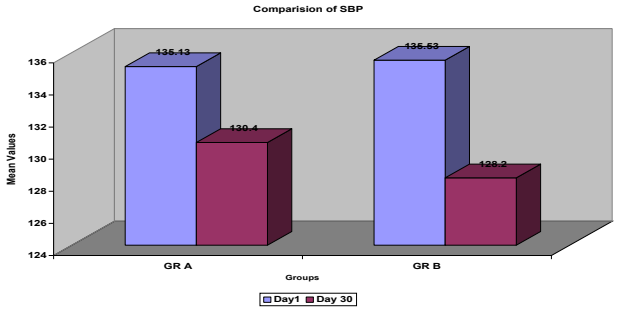
RESULTS

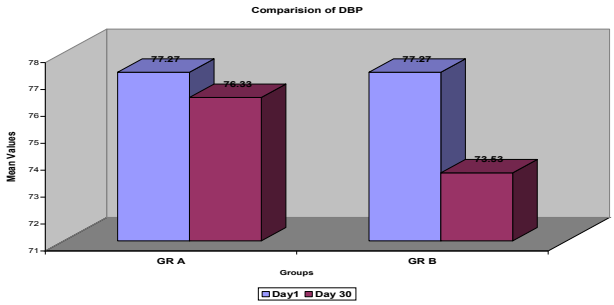
The study of effects of Aerobic exercises versus autogenic relaxation in hypertensive patients thus concludes that both aerobic exercises as well as autogenic relaxation techniques are useful in lowering Blood Pressures. Although Autogenic Relaxation shows more slow and gradual effects to gain benefits.

Group A

Variables	Pre – training values	Post – training values (4th week)	P Value
Blood pressure SBP	135.13±11.75	130.40±12.23	0.005
Blood pressure DBP	77.27±11.62	76.33±11.76	0.925
Heart Rate	80.53±10.10	79.0±8.94	0.723
Score in Rate of perceived exertion	5.57±1.83	3.90±1.54	<0.001
Hospital Anxiety n Depression score	10.17±2.78	9.07±3.14	0.001

From the above table it can be observed that there is significant difference in Systolic BP, Diastolic BP, Heart Rate (HR), Rate of perceived Exertion (RPE) and Hospital Anxiety and Depression Scale (HADS)

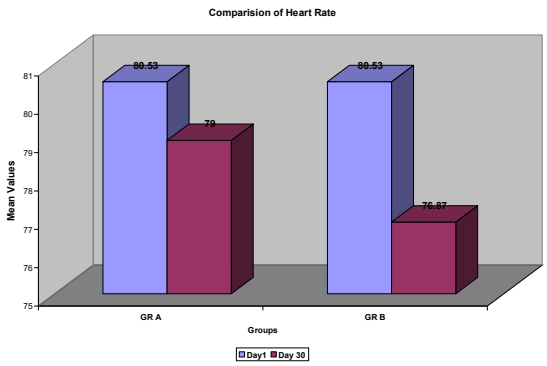


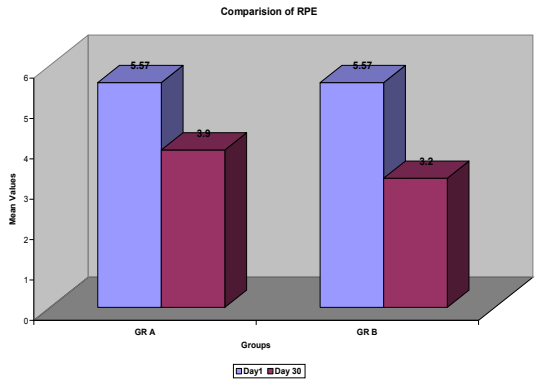


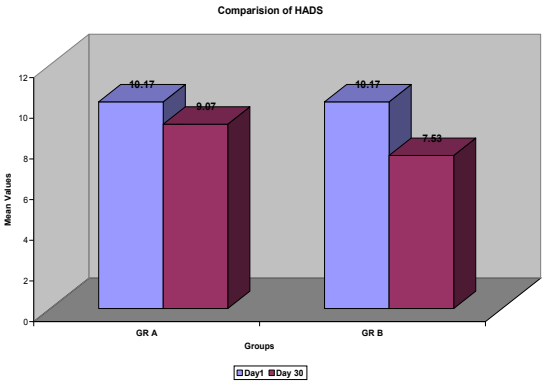
Group B

Variables	Pre – training values	Post – training values (4th week)	P value
Blood pressure SBP	135.53±11.52	128.20±14.01	<0.001
Blood pressure DBP	77.27±11.62	73.53±10.08	<0.001
Heart Rate	80.53±10.10	76.87±10.13	<0.001
Score in Rate of perceived exertion	5.57±1.83	3.20±1.56	<0.001
Hospital Anxiety n Depression score	10.17±2.78	7.53±3.07	<0.001

From the above table it can be observed that there is significant difference in Systolic BP, Diastolic BP, Heart Rate (HR), Rate of perceived Exertion (RPE) and Hospital Anxiety and Depression Scale (HADS) scores between day 1 and Day 30





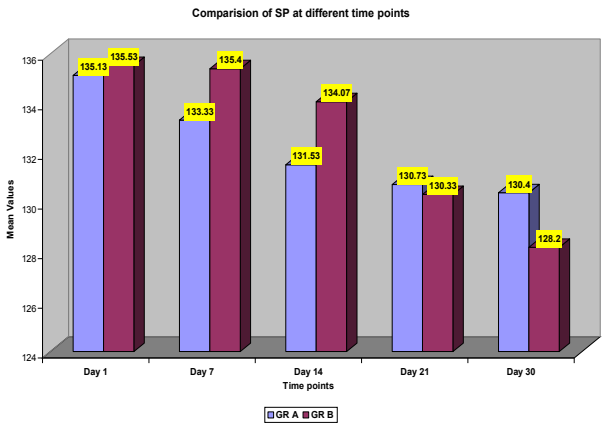


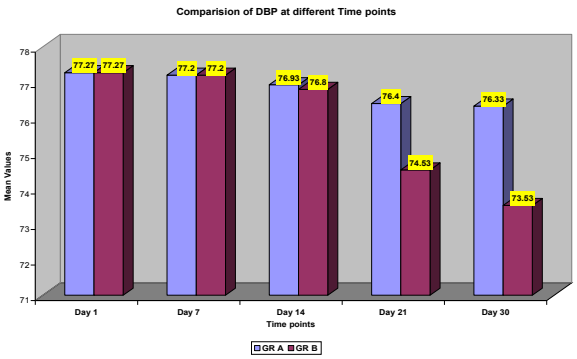
For quantitative variables such as Blood Pressure (BP) , Heart Rate (HR), Rate of perceived Exertion (RPE) and Hospital Anxiety and Depression Scale (HADS) summary statistics as mean and standard deviation were calculated for both groups separately.

Mean Diff. Day1 & 30	Group A	Group B	P Values
SBP	4.73±8.59	7.33±6.81	0.373
DBP	0.93±8.20	3.73±2.77	0.006
HR	1.53±11.25	3.67±2.04	0.086
RPE	1.67±1.42	2.37±1.33	0.069
HADS	1.10±1.32	2.63±0.93	<0.001

If group A and group B are compared by obtaining the difference in values between Day 1 and Day 30 it is found that there is significant difference in Diastole BP, and HADS.

For calculating the p Values Non Parametric test Man Whitney test has been used to compare the difference between group A and group B and Wilcoxon test has been used for comparison within groups.





CONCLUSION

Daily basis the society can be benefitted if the techniques are used by hypertensive patients regularly and for longer Period of time.

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