COMPARISON OF HEART RATE AND BLOOD PRESSURE CHANGES DURING WALKING AND RUNNING BEFORE AND AFTER TRAINING IN HEALTHY ADULT WOMEN


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AIM: Physical exercise has been associated with heart rate and blood pressure in observational studies and individual clinical trials. The purpose of these study was to assess heart rate and blood pressure changes in healthy adult women students before and after training during walking and running.

MATERIALS and METHODS: Forty healthy women were taken as the subjects. Heart rate and blood pressure recorded before and after training during walking and running. In these study 1600 metres track measured using PCV reel tape was used for walking and running. The duration training programme five months. Every day 15-20 minutes walking and running.

RESULT: The examination at parameters BMI, Heart rate, Blood pressure, and SBP, DBP and study statistical analysis was estimated for all subjects. The data were analysed by disruptive and intervention studies.

DISCUSSION: The finding suggested a significant decrease in heart rate and blood pressure in healthy adult women after training as compared to before training for both during walking and running show that heart rate and blood pressure changes.

CONCLUSION: The present study should that physical activity has the ability to decrease the heart rate and arterial blood pressure in healthy adult women. After training physical activity reduce the risk of heart diseases.

KEYWORDS: BMI, Heart rate and Blood pressure.

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INTRODUCTION

The public health benefits of physical exercise like walking and running, especially for cardio production are widely accepted. Among the many biological mechanisms proposed to account for these risk-reducing effects is autonomic nervous system, regulate of heart rate.

During an exercise such as walking and running heart rate and blood pressure increase during exercise heart rate and peripheral vascular resistance decrease in response to vasodilatation of resistant arterioles within exercising skeletal muscle.

Most of the studies report that aerobic exercise enhances autonomic control of the heart, as indicated by training induced reductions in heart rate and blood pressure or increase in heart rate.
and blood pressure. Many studies reported no effect of training, any differences between trained and untrained. We hypothesised that cardiac autonomic regulation would be improved by walking and running but not strength training.

MATERIALS AND METHODS

Subjects this experimental study was carried out in Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupathi, A.P in India. The test group included 50 females age 18-24 years old healthy adult students of BPT and Paramedical and M.Sc who volunteered to practice and were randomly selected.

Each subject was asked to walk on the 1600M (1mile) track after which a 10 minutes rest was given. The subject was then asked to run on the same distance. Immediately heart rate and blood pressure are recorded. The same subjects were then given physical training which involved walking and running for 30 minutes duration daily for 3 months and then heart rate and blood pressure was calculated both during walking and running using sphygmomanometers for recording blood pressure and heart rate was recorded by palpating radial pulse/min. Results were analysed.

INCLUSION CRITERIA:

Healthy adult women subjects of age group 18-24 years are included, subjects should be active and free of cardiovascular and respiratory disorders, and subjects should be able to walk or run distance of 1600M before and after training.

EXCLUSION CRITERIA:

Subjects having orthopaedic limitation, smoking history, hyper tension, cardio vascular and respiratory disorders medications affecting metabolism are excluded.

INSTRUMENTS:

1600 mts (1mile) track measured by using open PVC reel tape, Manual sphygmomanometer and stethoscope are used to measure the blood pressure and heart rate manually.

STATISTICAL TESTS:

The data was analysed by using student and paired test in statistical package for social sciences. The P-value < 0.05 were considered to be significant.

RESULTS AND TABLES

According to measurements, two groups are not significantly different in terms of height, weight and BMI. Heart rate in before training during walking and running on track significantly high in before training subjects, compared with after training subjects.

Table No.1: MEAN, STANDARD ERROR MEAN AND P-VALUE FOR THE HEART RATE (BEATS/MIN) Levels Before And After Training.

<table>
<thead>
<tr>
<th>HEART RATE (BEATS/MIN)</th>
<th>BEFORE TRAINING</th>
<th>AFTER TRAINING</th>
<th>P-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESTING</td>
<td>78.1</td>
<td>68.18</td>
<td>0.00*</td>
</tr>
<tr>
<td>WALKING</td>
<td>126.2</td>
<td>106.58</td>
<td>0.00*</td>
</tr>
<tr>
<td>RUNNING</td>
<td>169.25</td>
<td>127.93</td>
<td>0.00*</td>
</tr>
</tbody>
</table>

Before training during walking and running Mean and SD 126.20±11.45, 169.25±12.46, and after training during walking and running Mean and SD 106.58±11.17, and 127.93±169.28. After training significant decrease was observed during resting, walking and running when compared to before training, p-values were 0.01.

Table No.2: MEAN, STANDARD ERROR MEAN AND P-VALUE FOR THE SYSTOLIC BLOOD PRESSURE (SBP) levels before and after training.

<table>
<thead>
<tr>
<th>SYSTOLIC BLOOD PRESSURE (SBP) (mm/Hg)</th>
<th>BEFORE TRAINING</th>
<th>AFTER TRAINING</th>
<th>P-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESTING</td>
<td>99.6</td>
<td>95.1</td>
<td>0.02*</td>
</tr>
<tr>
<td>WALKING</td>
<td>115.88</td>
<td>102.5</td>
<td>0.00*</td>
</tr>
<tr>
<td>RUNNING</td>
<td>144.85</td>
<td>124.35</td>
<td>0.04*</td>
</tr>
</tbody>
</table>

Statistical analysis showed a significant difference in SBP values between before and after training in healthy adult women during walking and running Mean and SD 115.88±8.38, 137.20± and 102.50±6.35, 124.35±16.53 significant difference were also found between before training and after training subjects.

Table No.3: MEAN, STANDARD ERROR MEAN AND P-VALUE FOR THE DIASTOLIC BLOOD PRESSURE (DBP) levels before and after training.

<table>
<thead>
<tr>
<th>DIASTOLIC BLOOD PRESSURE (DBP) (mm/Hg)</th>
<th>BEFORE TRAINING</th>
<th>AFTER TRAINING</th>
<th>P-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESTING</td>
<td>66.2</td>
<td>62.15</td>
<td>0.00*</td>
</tr>
<tr>
<td>WALKING</td>
<td>76.65</td>
<td>67.75</td>
<td>0.00*</td>
</tr>
<tr>
<td>RUNNING</td>
<td>77.7</td>
<td>72.3</td>
<td>0.01*</td>
</tr>
</tbody>
</table>
In DBP values during walking and running Mean and SD 76.65±12.22, 77.70±10.67 and 67.75±5.77, 72.30±7.37 statistically significant p-value were 0.01.

GraphNo.1:

GraphNo.2:

GraphNo.3:
DISCUSSION
Our results showed that the two groups were not significantly different in terms of Height, Weight and BMI. Our findings are similar to Mohammad Reza shahrak et al.1

According to the results of the present study, heart rates were more significant in before and after training, in before training healthy adult women compared to after training women in same group. Results are similar to Uusitalo et al.2 Also reported that aerobic training caused decreased in heart rate in adults after 5 years of regular exercise. During walking and running involves muscular activities sympathetic nerve that pass impulses to vasoconstriction area which acts as a cardio acceleratory centre situated in the reticular formation of medulla in the floor of 4th ventricle. After training heart rate creates an imbalance between the isotonic activity of sympathetic accelerator and parasympathetic depressor. Neurons in factor of greater vagal dominance in sympathetic activity and small decrease in sympathetic discharge. Training also decreases the intrinsic firing rate of sinoatrial node.3

In addition, all through SBP increases in during walking and running on track before training and after training subjects during exercise. Blood pressure values were higher in before training subjects compared to after training. Increase in SBP and reduction in DBP were observed in both before and after training female subjects. Our study similar to Becker at al.4

Before training the SBP and DBP both are highly increase during walking and running. After training SBP and DBP slightly decreased in all subjects. This changes are similar to Corigat et al.5 also reported highly significant increased in SBP and DBP during running.

Owen et al.6 found isometric exercises for less than an hour per week to reduce systolic blood pressure by 10.4mm/hg and diastolic blood pressure 6.8mm/hg. They suggest that an increase in aerobic physical activity should be considered as an important component at life style modification for prevention and treatment of night blood pressure.

CONCLUSION
The present study should that physical activity has the ability to decrease the heart rate and arterial blood pressure in healthy adult women. After training physical activity reduce the risk of heart diseases.

Conflicts of interest: None

REFERENCES

Kaarna Munisekhar, M.V Muralidhar, Madras Venkatachalam, Dalawai Hemalatha. COMPARISON OF HEART RATE AND BLOOD PRESSURE CHANGES DURING WALKING AND RUNNING BEFORE AND AFTER TRAINING IN HEALTHY ADULT WOMEN.


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