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Whirling, as a form of low intensity exercise

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ABSTRACT

Background and objectives: Regular physical activity produces cardiovascular adaptations that increase exercise capacity, endurance and skeletal muscle strength. Habitual physical activity also prevents the development of coronary artery disease. Present study was aimed to identify whirling exercise as a form of low intensity exercise. Whirling means to move around quickly in a circle, clockwise or counter-clockwise. **Material and methods:** A cross sectional study was conducted in selected subjects (n=200). Subjects were divided in to four groups based on the sex and age. Resting heart rate was recorded, on three days and the Mean was considered for the study. The low end of the "Target heart rate zone" was calculated by using Karvonen formula for every subject with their age and resting heart rate data. Blood pressure and Pulse rate were recorded before and after whirling exercise for six minutes. Then the Heart rate after whirling exercise was compared with low end of the Target heart rate zone, to check whether it was higher or lower than the low end of the 'Target Heart Rate Zone'. **Results and Discussion:** In our study, 88% of the subjects in Group A, 92% of the subjects in Group B, 86% of the subjects in Group C and 90% of the subjects in Group D, have achieved the low end of the Target heart rate after six minutes of whirling exercise. Mean and standard deviation values for (i) low end of the Target heart rate zone and (ii) Heart rate after whirling exercise were compared, in all the four groups. Statistical significance was obtained by using student t test. **Conclusion:** Whirling can be considered as a form of a low intensity exercise, as it raises the resting heart rate to low end of target heart rate, for all the four groups.

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1. Introduction

Regular physical activity, such as walking, running or swimming, produces cardiovascular adaptations that increase exercise capacity, endurance and skeletal muscle strength. Habitual physical activity also prevents the development of coronary artery disease and reduces symptoms in patients with established cardiovascular disease (1). There is also evidence that exercise reduces the risk of other chronic diseases, including type-II diabetes(2), osteoporosis(3), obesity(4), depression(5) and cancer of the breast(6) and colon(7).

With this background, Present study was aimed to identify the whirling exercise as a form of low intensity exercise. Whirling means to move around quickly in a circle (spinning around) clockwise or Counter-clockwise. Whirling is a form of isotonic exercise (8).

2. Materials and methods

A cross sectional study was conducted in selected subjects (n=200), belonging to rural area of Guntur district. Subjects were divided in to four groups (Table No.1) based on the sex and age. Subjects were included in the study after careful clinical examination to rule out any cardiac abnormality in particular and other diseases in general. Written consent was taken after explaining about the study. Resting heart rate (9) was recorded in the morning just before the subject gets out of bed, on

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three days and the 'Mean' was considered for the study. One week training was given to all the subjects, to familiarize whirling exercise. Individuals with Vertigo (10) on whirling or with abnormal vestibular response were excluded from the study. Blood pressure by Riva Rocci - Korotkoff method (11) was recorded in sitting position before and after whirling exercise. Pulse rate was recorded by using a Pulse-oxymeter (Viamed Company), which was applied on the right index finger. Subjects were asked to do whirling exercise for six minutes, with in the area of two square meters. Exercise was done under supervision, between 10 AM and 1 PM, at 29 °C room temperature. Pulse rate was recorded again after six minutes of whirling exercise.

The low end of the "Target heart rate zone" (12) was calculated by using Karvonen formula (13, 14) which was explained below, for every subject by using their 'Age and Resting heart rate' data.

Maximum Heart Rate = $206.9 - (0.67 \times \text{Age in years})$

'Maximum Heart Rate' is predicted, to a large extent, by age alone and is independent of gender and physical activity status (15).

Heart Rate Reserve = Maximum Heart Rate - Resting Heart Rate

Training range % = Heart Rate Reserve x 50%

Low end of "Target heart rate zone" = Training range % + Resting Heart Rate

If a person achieves Low end of "Target heart rate zone" by doing a specific exercise, then the intensity of exercise is considered as low intensity exercise (Table No.2).

In the present study, the 'Heart rate after six minutes of whirling exercise' was compared with 'low end of the Target heart rate zone' in each subject, to check whether it was higher or lower than the low end of the 'Target Heart Rate Zone'. If the 'Heart rate after whirling exercise' is more than the low end of 'Target Heart Rate Zone' in the given subject, it was considered that the subject has achieved an intensity in exercise, which is equal to low intensity exercise.

3. Results and Discussion

In our study, 88% of the subjects in Group A, 92% of the subjects in Group B, 86% of the subjects in Group C and 90% of the subjects in Group D, have achieved the low end of the Target heart rate after six minutes of whirling exercise. Mean and standard deviation values in each group, for low end of the Target heart rate zone and Heart rate after whirling exercise, were compared (Table No.3). Statistical significance was obtained by using student t test, ($P < 0.001$).

Limitations of this study includes

(i) subjects were included from only one area

(ii) 40 years and above age group was not included.

Table No.1 Groups, based on Sex and Age

Group	Subjects
Group A	Females, aged between 17 and 22
Group B	Males, aged between 17 and 22.
Group C	Females, aged between 30 and 35
Group D	Males, aged between 30 and 35.

Table No.2 Intensity of exercise in relation to Target Heart Rate Zone

Heart Rate	Training range %	Intensity of exercise
Low end of THR*	50 to 60	Low
Middle of THR	60 to 70	Medium
High end of THR	75 to 85	High

* Target Heart Rate Zone

Table No.3 Mean and Standard Deviation values of Heart rate.

Low end of THR* zone	Heart Rate after whirling exercise	P value
Group A 133.64±1.91	145.08±16.92	<0.001
Group B 130.52±2.58	148.24±12.32	<0.001
Group C 128.24±1.82	140.32±10.45	<0.001
Group D 126.12±1.65	141.42±13.35	<0.001

*Target Heart Rate

4. Conclusion:

Whirling can be considered as a form of a low intensity exercise, as it raises the resting heart rate to low end of target heart rate, for all the four groups. Low end of target heart rate corresponds to low intensity of exercise. So that we can conclude that six minutes of whirling exercise is equal to any other form of low intensity exercise.

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