



EFFECT OF RETRO RUNNING ON DEVELOPMENT OF HEALTH RELATED PHYSICAL FITNESS AMONG COLLEGE WOMENS

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ABSTRACT

Retro running is a less natural motion, but can be accomplished with some speed with practice .it is better to start out backward running or walking or also called retro pedalling. Like normal running backward running will add an additional degree of difficulty. To achieve the purpose of the study was find out the effects of retro running on health related physical fitness among college women. Thirty (n=30) women were randomly selected from Bharathiar university, Coimbatore and their ages ranged from 19 to 25 years. Group-I underwent retro run training and group -II acted as control group. The duration of the training period was restricted to six weeks and the number of sessions per week was confined to five days in a row. Muscular strength and endurance, flexibility, cardiorespiratory endurance was measured as variablesThe data were collected in raw form and analysed by computing the descriptive statistical techniques and 't' test were applied. The level of significance was set at 0.05 level of confidence.

Keywords: College Women, Physical Fitness, Endurance, Training, Health

1. INTRODUCTION

Running is a method of terrestrial locomotion allowing humans and other animals to move rapidly on foot. Running is a type of gait characterized by an aerial phase in which all feet are above the ground. This is in contrast to walking, where one foot is always in contact with the ground, the legs are kept mostly straight and the centre of gravity vaults over the stance leg or legs in an inverted pendulum fashion. A characteristic feature of a running body from the viewpoint of spring-mass mechanics is that changes in kinetic and potential energy within a stride occur simultaneously, with energy storage accomplished by springy tendons and passive muscle elasticity. The term running can refer to any of a variety of speeds ranging from jogging to sprinting. It is thought that human running evolved at least four and a half million years ago out of the ability of the ape-like *Australopithecus*, an early ancestor of humans, to walk upright on two legs. The theory proposed considered to be the most likely evolution of running is of early humans' developing as endurance runners from the practice of persistence hunting of animals, the activity of following and chasing until a prey is too exhausted to flee, succumbing to "chase myopathy" (Sears 2001), and that human features such as the nuchal ligament, abundant sweat glands, the Achilles tendons, big knee joints and muscular glutei maxims, were changes caused by this type of activity (Bramble & Lieberman 2004, et al.). There is nothing worse than knowing you can't run because of pain in an area of your body. But backward running can be done whether you have a groin, hamstring, knee, Achilles' tendon, or ankle injury. You can also continue to run if you have back pain or shin splints. Running backward will strengthen the opposing muscle groups that you normally work when running forward. Forward running puts a lot of pressure on the hamstrings and knees. Backward running will strengthen your calves, quads and shins to balance your muscular strength. It has been said that taking 100 steps backward is the same as taking 1,000 steps forward, and that going backward burns a fifth more calories than running forward. Not only is this great to enhance weight loss, but for those who are busy, going backward burns more calories in a shorter period of time.

Chaloupka et.al. (1997) indicated that: 1) at a given elevation, backward walking elicited greater cardiorespiratory, metabolic, and perceptual responses than forward walking and 2) backward walking at 5% elevation could provide a sufficient stimulus to maintain cardiorespiratory fitness.

Cavagna, Legramandi, and Torre (2010) concluded that the landing-takeoff asymmetry found in running, hopping and trotting is the expression of a convenient interplay between motor and machine. More metabolic energy must be spent in the opposite case when muscle is forced to work against its basic property (i.e. when it must exert a greater force during shortening and a lower force during stretching).

Flynn and Soutas-Little (1995). suggested that backward running at a self-selected speed may reduce patellofemoral joint compressive forces and, coupled with the quadriceps strengthening that has previously been reported, may be beneficial in the rehabilitation of patellofemoral pain syndrome in runners. However, constant speed comparisons or other models may yield different results.

The purpose of the study is to find out the effect of retro running on selected health related physical fitness components among college women's

2. METHODS AND MATERIALS

For conducting this study Thirty (n=30) women were randomly selected from Bharathiar university, Coimbatore and their ages ranged from 19 to 25 years.

Group-I underwent retro run training and group -II acted as control group. The duration of the training period was restricted to six weeks and the number of sessions per week was confined to five days in a row. Muscular strength and endurance, flexibility was measured as variables

The data were collected in raw form and analysed by computing the descriptive statistical techniques and 't' test were applied. The level of significance was set at 0.05 level of confidence.

3. RESULTS

TABLE I
COMPUTATION OF 't' RATIO ON MUSCULAR STRENGTH AND ENDURANCE OF RETRO TRAINING GROUP AND CONTROL GROUP

Groups	Pre-test mean	Post test mean	Mean Difference	DM	't'-ratio
Retro training group	11.40	12.80	1.4	.940	6.65
Control group	11.40	11.5	0.01	0.02	2.086

Significant at 0.05 level for the degrees of freedom 1 and 14, 2.14

Table -I shows that the 't' ratios on retro training group was 6.65. Since, the values was higher than the required table value of 2.14, it was found to be statistically significant at 0.05 level of confidence for the degrees of freedom 1 and 14. Further the obtained 't' ratio of 2.086 between pre and post- test of control group was lesser than the required table value of 2.14, found to be not statistically significant. From the result it was inferred that retro training produced a significant improvement in the muscular strength and endurance among college women's

TABLE I
COMPUTATION OF 't' RATIO ON FLEXIBILITY OF RETRO TRAINING GROUP AND CONTROL GROUP

Groups	Pre-test mean	Post test mean	Mean Difference	DM	't'-ratio
Retro training Group	25.00	34.60	9.60	0.75	12.72*
Control group	25.46	25.73	0.26	0.20	1.293

*Significant at 0.05 level for the degrees of freedom 1 and 14, 2.14

Table -I shows that the 't' ratios on retro training group was 12.72. Since, the values was higher than the required table value of 2.14, it was found to be statistically significant at 0.05 level of confidence for the degrees of freedom 1 and 14. Further the obtained 't' ratio of 1.293 between pre and post- test of control group was lesser than the required table value of 2.14, found to be not statistically significant. From the result it was inferred that retro training produced a significant improvement in the flexibility among college women's

4. DISCUSSION

The findings of the study shows that the retro training enhance the flexibility and muscular strength and endurance according to **Cedric Whitaker (2015)** found a study on "The Effect of Backward Running on Hamstring Flexibility in College Football Athletes An independent t-test showed a statically significant difference in hamstring flexibility between groups ($p=0.01$). With the experimental group having a mean increase of 0.75cm in hamstring flexibility, while the control group only had an increase of only 0.14cm. another study shows that Backwards running (BR) results in greater cardiopulmonary response and muscle activity compared to forward running (FR) **Ordway et.al., (2016)** conducted a study on the physiological effects of forward and backward walking training on lower extremity muscle strength before and after exhausting exercise. Fourteen healthy male adults were randomly divided into backward walking (BW, $n=7$) and forward walking (FW, $n=7$) training groups. Each group took part in pre-test consisted of knee extensor and flexor isokinetic peak torque (PT), total work (TW), electromyography (EMG) before and after exhausting exercise. Exhausting exercise was used to measure lower extremity endurance, which is incremental treadmill running using the Bruce protocol. The BW and FW training groups participated in a 6 weeks training program, consisted of 3 sessions per week for a total of 18 sessions. After finishing the training program, the post-test was performed using the same method. BW training group showed significant increases in knee extensor/flexor PT (4.6%/13.9%), TW (17.34%), EMG (35.9%) before exhausting exercise and PT (23.9%/18.8%), TW (46.7%), EMG (59.8%) after exhausting exercise. But FW training group did not show a significant increase in knee extensor/flexor PT (0.1%/3.2%), TW (1.8%), EMG (10.9%) before exhausting exercise and PT (2%/1%), TW (5.6%), EMG (17.2%) after exhausting exercise. BW training has positive effects on lower extremity muscle strength, especially muscle endurance that is important to prevent muscle weakness during competitive sports

5. CONCLUSION

Based on the findings and within the limitation of the study it is noticed that practice retro training helped to improve physical fitness variables of college women. It was seen that there is progressive improvement in the selected criterion variables of experimental group of college girls after six weeks of training program. Further practice of drills also helps to improve other fitness factors i.e. Flexibility, Muscular Strength Endurance. It was concluded that individualized effects of retro training group showed a statistically significant positive sign over the course of the treatment periodon selected health related physical fitness variables of college women.

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