



Research Article

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# The Effect of Six Weeks Endurance Training on Physical Fitness of Handball Team of Durame Town, Southern Ethiopia



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## Abstract

Endurance training is an important training program to improving physical fitness of handball project trainees. The study was conducted to find out the effect of six weeks endurance training on selected physical fitness variables of kembata tambaro zone handball team. This study consists of 30 project trainees divided into two groups; each group consists of 15 trainees. Group I (experimental group-15) group II (control group-15) participants were selected through simple random sampling. The physical fitness variables for the study such as flexibility (sit and reach), explosive power (vertical jump), muscular strength (sit-up), speed (50m run), agility (10x4 shuttle run) and coordination. Source of data, primary and secondary source of data were used. Tests were taken two times at pre training and post training. Data were analyzed by using spss software version 16.0. Comparison of mean was done by paired T-test.

The result obtained in this study indicated that there was significant improvement in selected physical fitness variables because of endurance training after six weeks Endurance training program. In control group there was not much difference mean value and standard deviation comparing with pre and posttest of physical fitness variables in study there was significant difference in the experimental group when compared to the control group on selected physical fitness Variables such as flexibility, explosive power, agility, muscular strength and endurance, speed, and coordination. Therefore, coaches may be encouraged to use in training session to produce professional handball players for female players, different age group and different level of handball players.

**Keywords:** Handball; Endurance Training and Physical Fitness

## Introduction

Modern handball is a fast and strenuous body contact sport, characterized by incredible athletic performances by athletes. In fact, modern handball players can perform many different moves, jumps, running, change of direction and technical movements in very short time and with an order determined by the tactical situation. Team handball is a complex flashing game, which requires players to have well developed aerobic and anaerobic capacities [1]. Motor ability, sprinting, jumping, flexibility and throwing velocity represent physical activities that are considered as important aspects of the game and contribute to the high performance of the team. Successful performance requires explosive power of the legs and arms, sprint velocity and kinesthetic feeling in ball control Physical fitness is the ability to perform vigorous physical activity. It is not measured in terms of achieving specific motor skills, but rather it is assessed in terms of muscle strength, endurance, and flexibility [1,2].

The circulatory and respiratory systems are also involved because of their role in supplying muscles with blood and oxygen [3]. Physical Preparation is the level of development of the motor possibilities of the player, obtained through the systematic repetition of the physical exercises. It means the improvement of the motor qualities, the domain of a wide variety of abilities and the development of the morphologic and functional indices of the organism in compliance with the requirements of the game. Team handball has proved and established itself as one of the most popular team sports. It has been established that maximal oxygen uptake ( $VO_{2max}$ ), has been a fundamental basis for team handball on the international level). It has been clear that intermittent nature of game demands higher aerobic metabolism.

## Aim of the Study

This study is to examine the effects of six weeks Endurance

training on selected physical fitness variables of handball trainers in Kembata Tambaro Zone Durame Town project [4].

### Methods

Using simple random sampling techniques 30 handball project trainees were selected. The subjects were divided in to two groups. Each group consists of 15 players, Group I experiment (training group) and group II control group. The health history and physical readiness questionnaire was prepared with the aim of identifying their health and to know how much they were active in training. Primary and secondary data sources were used according to the nature of the study. The primary data were taken from pre and post-test measurements in the field throughout the training program (three months) [5].

The related supportive data were obtained from different secondary sources such as different documents, like books, journals, and Internet sources to get relevant and sufficient information regarding the study area, face-to-face interviews were conducted by six experienced health professionals, supervised by public health officer from the town health office. Data collectors and supervisor were trained for two days through practical exercises. Total population of the study were handball project trainees in Durame town, Kembata-Tambaro zone. Those participants who fulfilled the health history and physical readiness questionnaire requirements were included in the study. Based on this, trainees who were free from any chronic disease as well as free from recent physical injury were included in the study [6].

### Procedure

The purpose of the study is to find out the agility of the subjects. Two stopwatches, measuring tape, clapper, score sheet and track marking power. Two parallel lines were marked on the floor 10 mats apart with two wooden blocks placed behind one of the lines. The subjects started from behind the other line. On the signal "Ready; go" the subjects run towards the blocks, touch the

line. The time of the better of the two trials to the nearest tenth of a second is recorded. The subject being tested should be in supine lying position with bent knees, feet flat about 18 inches from the buttocks, and the hands touching the side of the head. A partner holds the subject's feet as the exercises are performed. The subject touches the elbow to the alternate knee with each sit up. The subject performs as many sit-ups in one minute as possible. The score is recorded in numbers of correct repetitions for one minute [7].

### Statistical Analysis

Statistical analysis was completed using the statistical package for the social sciences (SPSS) version 25. Collecting data were analysis by using paired T-test to compare the deference between the experimental group and control group of physical fitness variables of handball players in Kembata Tembaro zone Durame town project. The level of significance was fixed at 0.05 level.

### Results

The pre-test and post-test mean of the muscular strength and endurance for experimental group were 32.33 and 39.00 and for control group were 38.00 and 42.27 respectively. The calculated "t" value for the experimental group was 11.28, which was higher than the table value of 0.05 level. In this case, the control group calculated value for "t" ratio was 1.98 (Table 1). The pre-test and post-test mean of the speed for experimental group were 13.47 and 11.80 and for control group were 13.93 and 14.27 respectively. The calculated "t" value for the experimental group was 8.92 (Table 2). Table.3. shows that the pre-test and post-test mean of the agility for experimental group were 16.833 and 13.9133 and for control group were 16.65 and 17.1067 respectively. The calculated "t" value for the experimental group was 4.93 which was higher than the table value of 0.05 level. In the case the control group calculated value for "t" ratio was 1.50 Table 3.3 Difference in mean of experimental and control group on agility (second) (Table 3).

**Table 1:** Difference in mean of experimental and control group on muscular strength and endurance (number).

Groups	Number of groups	Pre-test mean	Post-test mean	Mean difference	Std. deviation	Std. error of mean difference	df	"t" ratio
Experimental	15	32.33	39	-6.67	2.29	0.59	14	11.28*
Control	15	38	42.27	-4.27	6.8	1.76	14	1.98

**Table 2:** Difference in mean of experimental and control group on speed (second).

Groups	Number of groups	Pre-test mean	Post-test mean	Mean difference	Std. deviation	Std. error of mean difference	Df	"t" ratio
Experimental	15	13.47	11.8	1.67	0.72	0.19	14	8.91*
Control	15	13.93	14.27	3.33	1.4	0.36	14	0.92

**Table 3:** Difference in mean of experimental and control group on agility (second).

Groups	Number of groups	Pre-test mean	Post-test mean	Mean difference	Std. deviation	Std. error of mean difference	Df	"t" ratio
Experimental	15	16.833	13.9133	2.92	2.2922	0.5918	14	4.93*
Control	15	16.6533	17.1067	4.5333	1.16794	0.30156	14	1.503

### Discussion

This study was conducted to assess the effect of six weeks endurance training on physical fitness of handball team of durame town, southern Ethiopia. The handball team is good team within the zonal level. Most of the players don't have the ability to jump and sprint, in this reason most of the time they are losing their chances to score the more goal. The researcher to improve the standard of the team for the betterment to next level or to attain the high performance. To achieve the purpose of the study, 30 subjects (experimental group 15 and control group 15) were randomly selected from durame town handball project. The study was focused on experimental study within six weeks effects of Endurance training on selected physical fitness variables. Training was done 3 times per week for 40-60 minutes per session. The selected physical fitness variables were flexibility (sit and reach test), explosive power (vertical jump test), muscular strength and endurance (sit-up test), speed (50-meter sprint run test), agility (shuttle run 10x4 test) and coordination. Test was taken from both groups before and after endurance training programs [8].

Before training program, the pre physical fitness test for each variable was taken. At the end of training program, the posttest was taken from both groups. Paired sample T-test was used to find out the significant difference ( $p < 0.05$ ) between the post training result and pre training result of each variable. In experimental group cases, 0.05 level of confidence was fixed to test significance, which was considered as appropriate. The result obtained in this study showed significant improvements in selected physical fitness variables in experimental group but there is not much significant difference and the mean value in control group when comparing pre and posttest. The study showed that physical fitness variables improved significantly (experimental group). This was because of Endurance training program they were engaged in and there was significant difference in the experimental group when compared to the control group on selected physical fitness Variables such as flexibility, explosive power, agility, muscular strength and endurance, speed, and coordination [9].

It is highly expected from sport professionals and related fields to guide and educate on the importance and value of endurance training programs to achieve physical fitness performance. Since endurance training program is easy to manage, coach may be encouraged to use in their training session to produce professional handball players. Endurance training should be in all trainings that involve the development of physical fitness for

competition or rehabilitation purpose. Effects should be taken to the benefits of endurance training exercises among Kembate Tambaro Zone handball project trainees. Further research on effect of endurance training program should focus on handball project trainees for female and other age group, on effect of endurance training program should focus on for other games and on effect of endurance training program should focus on all the level players [10].

### Conclusion

The result of the study related that there was significant difference in the experimental group when compared to the control group on selected physical fitness Variables such as flexibility, explosive power, agility, muscular strength and endurance, speed, and coordination.

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