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PHYTOCHEMICAL SCREENING OF ANCHOTE (COCCINIA ABYSSINICA (LAM.)) AND EFFECT OF EXTRACT VIA AEROBIC EXERCISE ON ENDURANCE PERFORMANCE

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Abstract

Many aspects affect sports performance, and nutrition may be one of the most important. The study aimed to examine the phytochemical composition and assess the impact of supplementing Anchote (Coccinia abyssinica (Lam.)) with aerobic exercise on the endurance performance of the Mattu Kenema male football club.
Eighteen players from the Mattu Kenema football team were chosen based on an experimental research methodology. The selected athletes were divided into three groups at random: the supplement group (SG = 6), the aerobic exercise group (AG = 6), and the supplement with the aerobic exercise group (SAG = 6). Every day, members of the SG group took an Anchote (Coccinia abyssinica (Lam.)) supplement, while AE spent 45–60 minutes exercising aerobically. SAG took both interventions for 12 weeks. Pre-tests and post-tests were conducted on all parameters, such as the 12-minute run test and push-up.
The phytochemical screening result of Anchote (Coccinia abyssinica (Lam.)) extract showed the presence of various secondary metabolites such as phenol, flavonoid, tannin, glycoside, steroid, and terpenoids. The proximate composition of this extract indicates the higher content of carbohydrates (69%) and the lower fat value (2.1%).
Based on the study, 12 weeks of Achote (Coccinia abyssinica (Lam.)) consumption combined with aerobic exercise was thus shown to improve players' fitness levels at Mattu Kenema male football club. Based on the findings, Anchote (Coccinia abyssinica (Lam.)) supplement associated with aerobic exercise would enhance endurance performance due to the extract's secondary metabolites such as flavonoid, tannin, and phenol.

Keywords: *phytochemical, Anchote (Coccinia abyssinica (Lam.)), aerobic exercise, endurance performance.*

INTRODUCTION

In the south and south-west of Ethiopia, Anchote (Coccinia abyssinica (Lam.) (Cogn.)) is one of the significant endemic crops that are primarily produced for its edible tuber. Anchote is a double crop since its tender young leaves and tendrils are cooked and eaten as

a vegetable. As one of the underappreciated vegetables, Anchote germplasm has not received much attention in terms of research efforts to thoroughly characterize it in terms of its nutritional composition, anti-nutritional factors, functional properties, phytochemical composition (both qualitative and quantitative), and volatile organic compounds.

Anchote is a traditional diet (Figure 1.) in Oromo culture around Wollega province, where there is also cultivation of other root crops such as Oromo potatoes, Irish potatoes, enset, sweet potatoes, yam, and taro (ABERA, 1995). Among all the roots and tubers grown in the area, Anchote holds an exceptional place in the customs of the Oromo people. Anchote is a prestigious Oromo dish used during special ceremonies and holidays (HABTAMU-KELBESSA, 1997; HABTAMU, 2011). A delicious Anchote dish is prepared with the tuber's clarified butter (traditional ghee) (FICHTL-ADMASU, 1994). It is also prepared in the form of stew locally called Anchote 'Ittoo' for joyful events (HABTAMU- KELBESSA, 1997). Solely the 'Ittoo' is prepared from sliced Anchote with sufficient locally made butter, buttermilk, and cheese by seasoning with different traditional spices and then served with 'Injera,' a round leavened bread made from tef (Eragrostis tef) (Zucc) trotter, which is called 'Chumbo' in Afan Oromo.

Figure 1: 'Ittoo' served with tef 'Injera' or 'Chumbo'

Research suggests Anchote is comparatively higher in crude protein, utilizable carbohydrates, fiber, energy, and ash content than cassava, sweet potatoes, and other tubers (HABTAMU et al., 2013). According to reports, Anchote also has a significant calcium concentration (DESTA, 2011; HABTAMU et al., 2013). Anchote has historically been used to strengthen sick individuals and cure damaged or fractured bones, possibly related to its high calcium content (ABERA, 1995; HABTAMU- KELBESSA, 1997).

Several aspects affect sports performance, and one of the most important ones may be diet (MAUGHAN et al., 2007; BURKE-INGE, 1994). Adequate supplementation between bouts of high-intensity exercise is essential to optimizing subsequent exercise performance. Using pre-workout supplements has become progressively more popular among recreational and elite athletes. Most of these studies suggest that aerobic and anaerobic performance can be

improved by ingesting supplements and recommendations from expert panels in sports nutrition. Numerous studies agree that diet and performance are highly correlated **(**BEAN, 2010; MONTECALBO-CARDENAS, 2015) a well-planned eating strategy will help in supporting any training program, whether athletes are training for fitness or competition, promote efficient recovery between workouts, reduce the risk of illness or overtraining, and help them in achieving their best performance (PAUGH, 2005; GIROUX, 2015; and MILLER et al., 2015). Of course, only some of the ones since everyone has different nutritional needs. Moreover, some athletes require more calories than others, and athletics as a sport has its unique nutritional demands vis-à-vis the type of events in which athletes participate (JUZWIAK-ANCONA LOPEZ, 2004; GRUNERT et al., 2010; MAJORS, 2015). However, it is possible to find broad scientific agreement on what constitutes a healthy diet for sports generally (BEAN, 2010).

Moreover, the foods an athlete chooses have an impact on their performance in training and competition, which is why a healthful diet is highly recommended to support regular, intensive training and decrease the risk of illness and injury (ALAUNYTE et al., 2015; MILLER et al., 2015).

Athletes take dietary supplements hoping to increase their performance; however, many use supplements without fully realizing the potential advantages and disadvantages (MAUGHAN et al., 2007). Because there is a need for more information regarding the nutritional value, especially concerning athletic performance, it is crucial to investigate the phytochemical constituent of Anchote (Coccinia abyssinica) and determine how the extract affects endurance performance.

MATERIALS and METHODS

The study was conducted at Mattu, which is located 600 km away from Addis Ababa in the south-west of the country. It is in the Oromia National Regional State in the Ilu Aba Bor zone. The Anchote (Coccinia abyssinica) used in this study was collected around the Yayo forest and transported to a chemistry laboratory for extraction. Plant-based products and physiochemical screening were extracted at Mattu University, College of Natural Sciences, Department of Chemistry (1 December 2021 to 2 February 2022).

The Study Design

The study design started with an experimental research design consisting of field tests.

Study Population

The entire population of this study consists of all Mattu Kenema football players. Mattu Kenema Football Club has 21 coaching staff members, including two football coaches, 18 football players, and one therapist.

Sample Size and Sampling Techniques

A first questionnaire was distributed to identify interested players who would participate confidentially in the research. After the subjects who volunteered to participate in the study were identified, the subjects were assigned to three equal streams of six-player supplement receiver groups, six-player aerobic exercise groups, and six-player supplements with aerobic exercise groups by randomization techniques.

Inclusion and Exclusion Criteria

This study included participants between the ages of 19 and 30 with a healthy weight range (18.5 to 24.9) who volunteered to participate in at least three training sessions per week. In addition, participants under 18 or older than 31 years old, had a current injury, any health-related contraindication, any food allergy, used any drug, or reported a general sense of being poorly were excluded from this study.

Data Collection Instrument

The data for this study was collected from the results of a pre-and post-test exercise training program. Quantitative data was collected through the appropriate physical fitness test measures, like the 12-minute run test and push-up test. Before the participants went to the exercise training program, a physical fitness test was given, and the result was recorded by the researcher with the help of one assistant data recorder. After eight consecutive weeks of training, a post-test was taken to record the test result.

The Procedure of Data Collection

First, the researcher created awareness about sports nutrition and how to choose a healthy diet and good nutritional supplements to enhance physical fitness and live healthily. In addition, the researcher gave instructions that participants should not engage in other exercise programs and consume nutritional supplements. During the study period, participants should not exercise for at least 24 hours before each trial. Anchote was given

based on the assumption that, on workout days, the supplement should be taken within 30 minutes after completing an aerobic training session over the 8-week study period. It was also assumed that the study subjects should only practice exercise according to the exercise protocols.

Procedures of Endurance Parameter Test Analysis

The two components used to quantify endurance performance are cardiovascular and muscular endurance, so both were assessed to assess the impact of Anchote supplementation on endurance performance. The first week before the start of the 8-week aerobic training program would be used for all pre-test measurements, and the first week after the program's conclusion would be used for post-test measurements**.** The testing procedure includes a warm-up, a test, and rest periods. Each test was described and shown in action. To get comfortable with the testing processes, subjects would go through practice trials before the test. All experiments would counterbalance pre-and post-testing to guarantee that testing effects are kept to a minimum. Each test was administered as instructed to the subjects, and the results from the best trials were used for this investigation. Moreover, each test procedure is discussed below.

Assessment of Cardiorespiratory Fitness

12 Minute Run Test

The 2011 Standardized Test for Aerobic Capacity developed by the California Department of Education assesses the capacity of the cardio-respiratory system by measuring endurance (California Department of Education, 2011). The 12-minute run test is referred to as the Cooper test, which Dr. Kenneth Cooper designed. This is measuring the distance covered in 12 minutes.

Assessment of Muscular Endurance

Push-Up Test:

The muscular strength and endurance fitness areas determine the health status of the musculoskeletal system. Balanced, healthy functioning of this system requires that muscles work forcefully (strength) over a period (i.e., endurance). Three significant areas are tested

to determine the health of the musculoskeletal system: (1) abdominal strength and endurance, (2) lower body strength and endurance, and (3) upper body strength and endurance (RUIZ *et al.*, 2006). This test aims to evaluate the endurance of the arm and chest muscles.

Plant Collection and Preparation

Anchote (Coccinia abyssinica (Lam.)) was collected in September 2022 around Mattu town, Ilubabora Zone, southwestern Ethiopia. The collected Anchote (Coccinia abyssinica (Lam.)) was washed, sliced, and air-dried under shade. It was powdered using an electrical grinder to improve subsequent extraction by rendering the sample more homogenous, increasing the surface area, and facilitating the penetration of the solvent into the cell.

Extraction

Both homemade and laboratory-scale extractions were used to investigate the effects of Anchote (Coccinia abyssinica (Lam.)) extract on endurance performance and phytochemical screening. The powdered plant material (20 g) was extracted with distilled water (0.5 L) for 24 hours at room temperature using maceration for phytochemical screening. The solvent extracts were filtered and concentrated using a rotary evaporator (Laborota-4000) at a temperature of 40 °C with a speed of 90 rpm. The resulting extracts were stored in desiccators until complete drying.

Phytochemical Screening of Anchote (Coccinia Abyssinica)

The extracts of Anchote (Coccinia Abyssinica) were investigated for preliminary phytochemical screening following the standard protocols. The presence of alkaloids, flavonoids, glycosides, steroids, terpenoids, Saponins phenol, and tannins was estimated according to standard methods (PANT et al., 2017). Sugars and carbohydrates using Benedict's test, protein estimation done by Lowry's method (ANSARI et al., 2015)

Quantitative Proximate Composition of Anchote (Coccinia abyssinica (Lam.))

The chemical composition of the pulverized samples was determined using the methods for crude protein (method 988.05), crude fat (method 2003.06), total ash (method 942.05), crude fiber (method 958.06), dry matter and moisture (method 967.08), and carbohydrate was calculated by subtracting the results.

Supplementation Protocol

For the first week of each session, the aerobic exercise group (AG) and the supplement with aerobic exercise group (SAG) did conditional exercise, after which the AG and SAG began practicing aerobic exercise. In contrast, the supplement receiver group (SG) consumed homemade Anchote supplements. In addition to aerobic exercise, (SAG) started using homemade *Anchote* supplements.

Training Protocol

The three-times-a-week training regimen (Table 1.) was stressed out for 12 weeks. The session began with a 10-15 minute general and specific warm-up period, followed by a 45–60 minute main workout of low-intensity, moderate-intensity, and high-intensity selected aerobic exercises, followed by 5 minutes of cool-down activities for the first four weeks. Then, the selected aerobic exercises gradually increased to high-intensity exercises for the last four weeks, followed by training.

Table1: Training protocol for all groups.

Treatments	Activities in the training
Total duration	12 weeks
Frequency	3days/week
Duration /session	45 -60minutes/session
Intensity	Low (45-55%), Moderate (60%-70%) and High (70%-90%)

Data Quality Control

To ensure the quality of the data, a standardized fitness test with appropriate tools and test protocols was employed for cardiovascular and muscular endurance. An exercise physiologist and certified fitness instructor among sports science department lecturers was hired as an assistant fitness test recorder to reduce the errors that might occur during the data collection process. The researcher created in-depth awareness to improve and collect quality data throughout the data collection process.

Method Data Analysis

The data was gathered through a 12-minute run test, and a push-up test was arranged for analysis. The data was analyzed using the SPSS statistical software for Social Science version 25.0, and a two-way ANOVA was performed to determine whether there was a

significant difference in the scores of the two groups for the 12-minute run and push-up. The level of significance would be $p \leq 0.05$.

RESULT and DISCUSSIONS

Phytochemical Screening

The results of the phytochemical screening (Table 2.) conducted on the Anchote (Coccinia abyssinica (Lam.)) aqueous extract revealed the presence of several secondary metabolites, including tannins, alkaloids, terpenoids, flavonoids, steroids, and phenol. The results suggest that Anchote extract is rich in secondary metabolites and may contain potential candidates for different biological activities. The phytochemical results of the plant extracts may have promising medicinal applications since tannin, terpenoids, saponin, phenols, and flavonoids are among the major phytochemicals of the plant root extracts.

Table 2: Qualitative phytochemical analysis of aqueous extract of Anchote

Phytochemicals	Test	Color expected	Result
Alkaloid	Wagner test	Reddish brown	+
Phenol	Ferric chloride test	Deep blue or black	+
Flavonoids	Sodium hydroxide test	Yellow to colorless	+
Saponin	Foam test	persistent foam	+
Terpenoids	Salkowski test	reddish brown ppt	+
Steroid	Liebermann's test	dark pink or red	+
Glycoside	Sodium hydroxide test	Yellow	+
Tannin	Braymer's test	Blue or greenish	+

Key: - = absence, +: presence, ++ = present in high concentration.

Qualitative Nutrient Analysis of Anchote

The qualitative proximate composition (Table 3.) of Anchote extract showed the presence of carbohydrates, protein, and fat.

Table 3: Qualitative nutrient analysis of Anchote

Nutrient	Methods	Result
Carbohydrates	Benedict's test	+
Protein	Biuret test	+
Fat	Emulsion (Ethanol)test	+

Key: - = absence, +: presence, ++ = present in high concentration

Demographic Characteristics of the Study Participants

The study included eighteen players from the Mattu Kenema Football Club; 100% of the participants received adequate training and supplementation; the average age of the sample respondents was 27. Nineteen years, with most falling between the ages of 23 and 29, the subjects' average height, weight, and BMI were 167.27, 62.30, and 22.00, respectively; this demonstrates the most straightforward, repeatable anthropometric measurement for assessing individual exercise. The data was gathered from stadiometer measurement, and height, weight, and BMI were arranged for analysis (Table 4.). The coded data was analyzed using descriptive statistics using the SPSS statistical software for Social Science version 25.0.

Table 4: Mean and standard deviation values of demographic characteristics of the study.

Subjects	Mean	SD
Age (years)	27.19	2.00
Height (cm)	167.27	.050
Weight (kg)	62.30	2.50
BMI	22.00	1.21

Comparison of the effects of Anchote (Coccinia abyssinica (Lam.)) supplements and aerobic exercise on cardiovascular endurance in different target groups.

Figure 2 summarizes the evaluation of the impact of aerobic exercise and Anchote (Coccinia abyssinica (Lam.)) supplements on cardiovascular endurance. The pre-test and post-test results showed a significant difference in SAG compared to SG within eight weeks of aerobic exercise; in contrast, the VO_2 max of study subjects showed a slight difference in AG but not a significant difference when compared to SAG within the same time frame. SAG's average VO_2 max significantly increased when they combined aerobic activity with the Anchote (Coccinia abyssinica (Lam.)) supplement.

The average VO_2 max for SAG was 43.25±3.81 on the pre-test, 45.13±2.36, and 50.13±2.99 post-test after eight weeks of supplementation and aerobic exercise training, respectively. This discovery revealed that the mean VO_2 max rose from the pre-test to the post-test. The mean value difference was statistically significant at $p<0.05$. The findings demonstrated that supplementation increases time to failure by boosting cellular mitochondrial

biogenesis and VO_2 max, increasing endurance capacity. A possible explanation for the improved performance is enhanced respiratory efficiency.

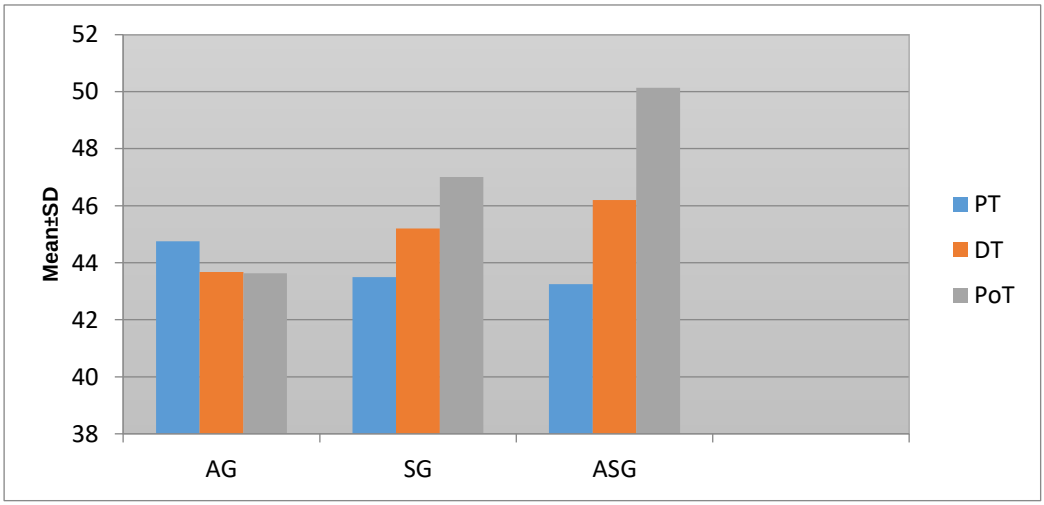

Figure 2: Mean and SD value of the 12 min run test.
Abbreviation: AG=aerobic exercise group, SG=Supplement group, SAG= supplement with aerobic exercise group, PT: Pre-test, and PoT: Post-test.

According to the study findings, Flavonoids are the compound found in Anchote (Coccinia abyssinica (Lam.)). Owing to their antioxidant qualities, flavonoids could reduce reactive oxygen species (ROS) and impact athletic performance via several physiological and metabolic processes. This result is consistent with the findings reported by Wang *et al.*, 2023, which said that flavonoid compounds can provide positive support for the athletic performance of adults. Particularly in the cases of non-athletes and long-term supplementation, flavonoid supplementation is effective in enhancing athletic performance. The study's findings were generally in line with those of Overdevest et al., 2018, since the flavonoid components found in Anchote (Coccinia abyssinica (Lam.)) improved endurance capacity by boosting VO_2 max and extending time to failure by promoting cellular mitochondrial biogenesis.

Comparison of the effects of Anchote (Coccinia abyssinica (Lam.)) supplements and aerobic exercise on muscular endurance in different target groups.

Figure 3 illustrates the impact of Anchote (Coccinia abyssinica (Lam.)) extract on muscular endurance. Results of the study indicated that, after 12 weeks of aerobic activity, there was a significant difference between pre-test and post-test results on SAG compared to SG. Pre- and post-test results on AG showed some difference, but not enough to be statistically significant. After 12 weeks of Anchote (Coccinia abyssinica (Lam.)) supplementation combined with aerobic activity, the mean value of the push-up test result for SAG increased

significantly. The results showed that the study subjects' muscular endurance (push-ups) considerably increased after utilizing an Anchote (Coccinia abyssinica (Lam.)) supplement in conjunction with aerobic training for 12 weeks. This might be because the extract contains different phytochemicals, like tannin. This finding is consistent with a 2015 study by Diaconeasa, Z. et al., which indicated that "tannins, a compound found in Anchote (Coccinia abyssinica (Lam.)) are also natural antioxidants, making them particularly useful in lowering the detrimental effects of free radicals."

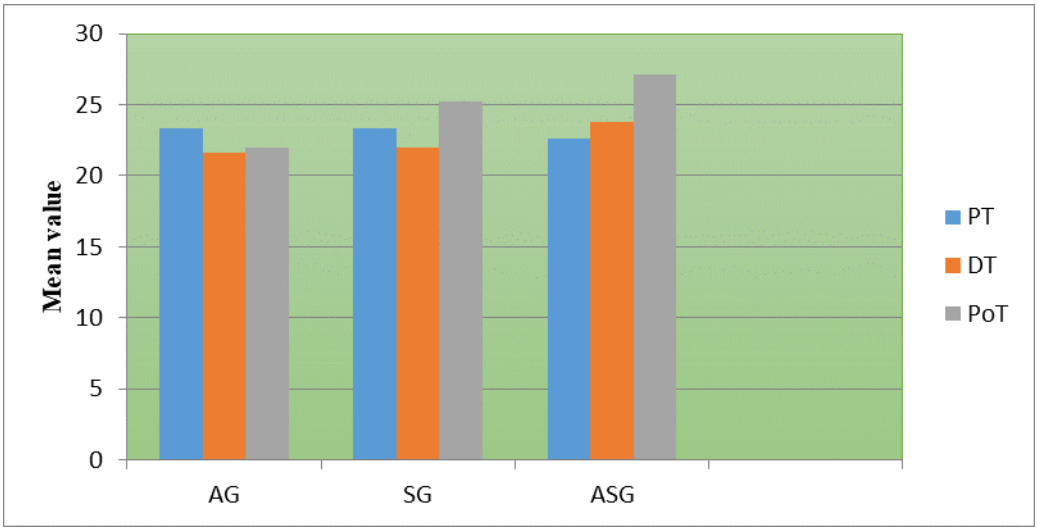

Figure 3: *Mean and SD value of the push-up test.*
Abbreviation: AG=aerobic exercise group, SG=Supplement group, SAG= supplement with aerobic exercise group, PT: Pre-test, and PoT: Post-test.

The mean difference values and significance levels of pre and post-test results in different group

The multiple comparison mean analysis's alpha value was set at 0.05 to determine which group was superior (Table 5). This study revealed that the mean SAG values from the pre-test and post-test differed significantly ($p<0.000$). This significantly improved the study subjects' cardiovascular (VO2 max) performance following 12 weeks of aerobic exercise plus supplementation. According to this analysis, there was a significant difference ($p<0.001$) between the pre-test and post-test mean values of SAG. This points in the right direction, as *A.* Anchote (Coccinia abyssinica (Lam.)) supplementation paired with aerobic exercise benefits the subject's muscular endurance.

Table 5: Effect of A. sativum supplement and aerobic exercise
Abbreviations: AG=aerobic exercise group, SG=Supplement group, SAG=supplement with aerobic exercise group, PT: Pre-test, and PoT: Post-test., MD: MD=mean difference, SIG: Significance, N=sample size per group.

Group	Test	N	Pre-test	Post-test	MD	SIG
	12-run test	6	44.75±2.92	43.63±2.82	1.13	.747
AG	Push-up		23.38±6.44	22.00±5.92	1.37	0.88
	12-run test	6	43.50±3.82	47.00±2.20	-3.50	.088
SG	Push-up		22.25±6.11	25.26±5.39	-1.88	0.78
	12-run test	6	43.25±3.81	50.13±2.99	-6.87	.001
SAG	Push-up		20.75±6.29	31.38±2.72	-10.62	.001

CONCLUSION

This study evaluated the effect of Anchote (Coccinia abyssinica (Lam.)) extract with aerobic exercise on endurance performance. The phytochemical screening of *A. sativum* extract revealed the presence of alkaloids, phenol, flavonoids, saponins, terpenoids, steroids, glycosides, and tannins. The presence of various phenolic compounds, such as flavonoids, in the Anchote (Coccinia abyssinica (Lam.)) extract increased the subject's cardiovascular endurance (VO_2 max) after 12 weeks of consumption. *The* Anchote (Coccinia abyssinica (Lam.)) supplement combined with aerobic exercise demonstrated significant improvement and improved push-up performance in the study subjects. The secondary metabolite present in the *A. sativum* extract improves the endurance performance of study subjects. We suggest that, Anchote supplementation may increase the regenerative capacity between training sessions, thus speeding up, and optimize the adaptional processes triggered by the endurance workout.

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APPENDIX-A

Table 1. Training schedule for the first month (May 2021)

Day	Types of exercise	Duration 45 Min	Set and rep	Rest	Intensity
Monday	**Warming up,** Jogging, Dynamic stretching, Slow walking	**15min**		1minute	Low (45-55%)
	Main session	**20min**			
	Stationary bicycle	6min	2x4	1minute	
	Jumping rope	7min	2x4	1minute	
	High knee drills	7min	2x4	1minute	
	cool down:-Stretching and relaxing exercise	**5min**	1	1minute	
Wednesday	**Warming up** ✓ Static stretching ✓ Dynamic stretching	15min		1minute	Low (45-55%)
	Main session	**20min**			
	• Feet elevated push-up	6min	2x4	1minute	
	• Lateral hurdle hope	8min	2x4	1minute	
	• Lateral cone hope	6min	2x4	1minute	
	cool down:- Stretching exercise	5min	1	1minute	
Friday	**Warming up:-** dynamic stretching	15min		1minute	Low (45-55%)
	Main session	**20min**			
	✓ Lateral jump	6min	4x3	1minute	
	✓ Single leg jump	8min	4x3	1minute	
	✓ Split Squat jumping	6min	4x3	1minute	
	cool down:- Stretching and relaxing exercise	5min	1	1minute	

APPENDIX-A Continued

Table 2.Training schedule for the second month (June 2021)

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Day	Types of exercise	Duration 55'Min	Set and Repetition	Rest	Intensity
Monday	**Warming up** Static stretching ✓ Dynamic stretching	15min			(60%-70%) Moderate
	Main session	**35min**		1minute	
	• Hope jump	8min	4x5	2minute	
	✓ Treadmill run	9min	4x5	3minute	
	✓ Depth jumps	8min	4x5	3minute	
	cool down:- Slow Stretching and relaxing exercise	5min	1	1minute	
Wednesday	**Warning up:-**Static stretching ✓ Dynamic stretching	15min		1minute	(60%-70%) Moderate
	Main session	**35min**			
	• Hope jump	8min	4x5	2minute	
	✓ Treadmill run	9min	4x5	3minute	
	✓ Depth jumps	8min	4x5	3minute	
	Cool down Stretching and relaxing exercise	5min	1	1minute	
Friday	**Warning up:-**Dynamic stretching	15min			(60%-70%) Moderate
	Main session	**35min**		1minute	
	✓ Hope jump	8min	4x5	2minute	
	✓ Single-leg lateral jumps	9min	4x5	3minute	
	✓ Depth jumps	8min	4x5	3minute	
	✓ Cool down Stretching and relaxing exercise.	5min	1	1minute	

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APPENDIX-A Continued

Table 3. Training schedule for the third month (July 2021)

Day	Types of exercise	Duration 60'Min	Set and Rep	Rest	Intensity
Monday	**Warming up**:- ✓ Static stretching ✓ Dynamic stretching	15min		1minute	(70%-90%) High
	Main session	**35**			
	✓ Jump rope	10min	4x3	2minute	
	✓ Bounding	10min	4x3	2minute	
	✓ Bench dumbbell press	10min	4x3	2minute	
	Cool down:- Slow Stretching and relaxing exercise	5minut		1minute	
Wednesday	**Warning up**:-Static stretching ✓ Dynamic stretching	15min		1minute	(70%-90%) High
	Main session	**35**			
	• Treadmill run	10min	4x3	2minute	
	• Lateral box	10min	4x3	2minute	
	• Bounding	10min	4x3	2minute	
	Cool down- Slow Stretching and relaxing exercise	5minute		1minute	
Friday	**Warming up**:- dynamic stretching ✓ Static stretching	15min		1minute	(70%-90%) High
	Main session	**35**			
	✓ Jumping rope	10min	4x3	2minute	
	✓ Bounding	10min	4x3	2minute	
	✓ Lateral box	10min	4x3	2minute	
	Cool down Stretching and relaxing exercise	5minute		1minute	