



## **THE IMPACT 3 WEEK OF FARTLEK TRAINING AND CIRCUIT TRAINING ON MUSCULAR STRENGTH AND MUSCULAR ENDURANCE AMONG LONG DISTANCE RUNNERS**

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### **Abstract**

The Purpose Of This Study Was To Find Out The Impact 3 Week Of Fartlek Training And Circuit Training On Muscular Strength And Muscular Endurance Among Long Distance Runners. Twenty Male Students From Palakkad District, Kerala Were Participant Randomly Sampled. The Age Of The Participant Was Ranged From 16 To 18 Years. The Selected Fitness Variables Muscular Strength Were Assessed By Using Euro Fit Sit-Ups And The Muscular Endurance Were Assessed By Using Flexed Arm Hand. The Selected Students Were Divided Randomly In To Two Groups. The Quasi Experimental Design Was Chosen Randomly Selected Participants Were Divided In To Fartlek Training Group And Circuit Training Group. Both The Training Group Underwent Specific Drills/Exercise According To Their Training Design Which Is Instructed By The Researcher. The Designed Dependent Selected Fitness Variables Are Muscular Strength And Muscular Endurance. The Obtained Data Were Statistically Analyzed Ancova Was Used To Find Out The Significant Difference. An Alpha Level Of 0.05 Was Used For All Tests. The Results Indicate That There Is No Significant Difference Between Fartlek Training Group And Circuit Training Group. There Was No Difference Between The Group Due To The Impact Of 3 Week Fartlek Training And Circuit Training.

**Keywords:** Circuit Training, Fartlek Training, Muscular Strength & Muscular Endurance And Ancova.

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## **1. Introduction**

Circuit Training Consists Of A Series Of Anaerobic Workouts Performed In Rapid Succession With Little Or No Rest In Between To Create A Cardiovascular Training Impact (Hall, 2005)(McArdle, 2001). Circuit Training Has Become A Popular Kind Of Exercise, In Part Due To Its Time Efficiency And The Fact That It Often Uses Lesser Loads (Baechle, 2000). Free-Weight Circuit Weight Training Sessions Are A Popular Type Of Group Exercise That Focuses On Improving Aerobic Capacity, Body Composition, Muscular Strength, And Endurance. Speed, Flexibility, Skill, Endurance, And Strength Are The Five Common Aspects Of Fitness For Every Activity. Each Component Is Developed By Elite Athletes As Part Of Their Competitive Preparation. In Field Sports, Speed And Acceleration Are Crucial, With Short-Distance Running Speed Being Crucial To Success (Baker, 1999) (Sayers, 2000)

Fartlek Allows Athletes To Run Any Distance And At Whatever Speed They Choose, Varying The Intensity And Occasionally Running At High Intensity. During This Type Of Exercise, Both The Aerobic And Anaerobic Energy Pathways Are Put To The Test. Fartlek Training Effectively Reduces Training Time While Allowing Each Individual To Demand A Different Type And Level Of Physical Condition, Resulting In Various Sorts Of Fitness Training Or Conditioning Required For Different People. It Also Allows For Greater Locomotor Engagement Time, Which Is A Necessary Component Of A Healthy Lifestyle. Furthermore, It Has A Multifaceted Effect On Fitness, Especially Among Beginners (Eleckuvan, 2014). Fartlek Training Incorporates The Athlete's Need For Speed And The Irregular Surfaces And Edges Of The Terrain As A Source Of Force Fluctuation. It Improves Endurance By Maintaining Optimal Ankle, Knee, And Hip Balance. It Entails A Change In Tempo During The Run, Moving Between Faster And Slower, More Unstructured Runs. Fartlek Training Differs From Other Training Methods In That There Are No Predetermined Time Laps Or Tempo. Fartlek Training Allows A Person To Test His Or Her Skills And Aerobic Capacity. It Can Also Motivate One To Workout Longer And Harder By Raising Anaerobic Threshold Levels. The Main Distinction Between Fartlek And Conventional Training Is That The Person May Work Out At Different Intensities (Vaithianathan, 2019).

As Therefore The Purpose Of The Study Was Find Out The Compare The Impact 3 Week Of Fartlek Training And Circuit Training On Muscular Strength And Muscular Endurance Among Long Distance Runners.

### **Participants**

This Study Included 20 Apparently Healthy Long Distance Runners (Boys, N=20) Aged 16-18 Years From Palakkad District, Kerala. The Participants Were Chosen Based On The History Of Their Long-Distance Running Background. As A Minimum, The Participant Must Have Competed In At Least 10 Long Distance Competitions. A Quasi Experimental Design Was Chosen For Practical Reasons Given The Nature Of The Current Analysis. The 20 Selected Long-Distance Runners Were Divided Into Two Experimental Groups: Circuit Training (N=10) And

Fartlek Training (N=10). Beyond The Supervised Setting, All Participants Were Encouraged To Continue Their Regular Levels Of Physical Exercise.

### **Measures**

The Participants Were Assessed Using The Council Of Europe's Verified And Standardised Eurofit Battery Of Muscular And Cardiovascular Endurance Tests (Council Of Europe Committee For The Development Of Sport, 1988). The Pre-Test Sessions Were Conducted Before The Start Of The Training Respectively And Post-Test Were Measures After The Completion Of Training Programme (Pretest And Posttest) To Assess The Changes That Occurred.

### **Sit Up Test**

The Aim Of This Test Was To Assess Abdominal Muscle Endurance. A Researcher Positioned The Participants While They Lay Supine On The Mat With Their Knees Flexed At A 90-Degree Angle And Their Feet Flat On The Floor. The Fingers Of The Participants Were To Be Clasped Behind Their Heads. The Competitors' Elbows Were To Strike The Knees And Return To The Starting Position As Many Times As Possible In 30 Seconds After Receiving The Word 'Go'. The Test Could Only Be Taken Once By Each Participant. In 30 Seconds, The Total Number Of Sit-Ups Accomplished Was Recorded.

### **Hanging With A Bent Arm**

The Aim Of This Test Was To Assess Upper-Limb Muscle Endurance. While Hanging From A Bar With Hands In A Pronated Grip And At Shoulder Width, The Respondents Had To Maintain A Bent Arm Position. The Contestants' Chins Were To Be Elevated Over The Bar For As Long As Possible. When The Participants' Gaze Dropped Below The Bar, The Test Was Over. The Test Could Only Be Taken Once By Each Respondent. The Entire Time Was Kept In Seconds.

### **Procedure**

The Circuit Training And Fartlek Programme Was Administered To The Experimental Group Under The Observation Of A Researcher. A Three-Week Training Programme Was Designed To Determine The Impact Of Both Circuit And Fartlek Training. Participants In The Experimental Group Were Allocated At Random And Told To Undertake Circuit Training And Fartlek Training, Respectively.

### **Circuit Training Schedule**

The 60-75minute/Session Training Included A Ten-Minute Warm-Up In Which The Participant Had To Play A Passing Game, 40 Minutes Of Circuit Training, And Two Rounds Of 15-30 Second Static Stretching Cool-Downs. The Frequency Of The Circuit Training Is Set 3 Days/Week (Monday, Wednesday And Friday).

### **Fartlek Training Schedule**

The 60-75minute/Session Training Included A Ten-Minute Warm-Up In Which The Participant Had To Play A Passing Game, 40 Minutes Of Fartlek Training, And Two Rounds Of 15-30 Second Static Stretching Cool-Downs. The Frequency Of The Circuit Training Is Set 3 Days/Week (Tuesday, Thursday And Saturday).

**Table-1: Computation of Analysis of Co-Variance on Muscular Strength**

Pre-Test Mean		Post Test Mean		Adjusted Post Test Mean		Sources Of Variance	Sum Of Square	Df	Mean Squares	F-Ratio
Ftg	Ctg	Ftg	Ctg	Ftg	Ctg					
23.30 ±2.79	24.30 ±1.84	24.10 ±1.57	25.40 ±2.10	24.12	25.37	Between	7.49	1	7.49	1.84
						Within	69.03	17	4.06	

Ftg-Fartlek Training Group, Ctg-Circuit Training Group

\* Significant At 0.05 Level of Confidence

(The Table Value Required For Significance At 0.05 Level With Df=1 And 17 Is 4.45)

Table 1 Shows The Pre Test Mean Of Fartlek Training Group And Circuit Training Group Are 23.30 And 24.30 Respectively And The Post Mean Of Fartlek Training Group And Circuit Training Group Are 24.10 And 25.10 Respectively. The Adjusted Post Test Means Of Fartlek Training Group And Circuit Training Group Are 24.12

And 25.37 Respectively. The Obtained F-Ratio Of 1.84 Which Is Lesser Than The Table Value 4.45 With Df 1 And 17 Required For Significance. The Study's Results Indicate That There Are No Significant Mean Differences In Muscular Strength Between The Fartlek Training Group And The Circuit Training Group At The 0.05 Level. As A Result, It Is Evident That Neither The Fartlek Training Group Nor The Circuit Training Group Significantly No Difference The Participants' Muscular Strength.

**Table – 2: Computation of Analysis of Co-Variance on Muscular Endurance**

Pre-Test Mean		Post Test Mean		Adjusted Post Test Mean		Sources Of Variance	Sum Of Square	Df	Mean Squares	F-Ratio
Ftg	Ctg	Ftg	Ctg	Ftg	Ctg					
5.53 ±0.96	5.49 ±0.92	6.69 ±0.48	6.80 ±0.59	6.69	6.81	Between	0.06	1	0.06	0.21
						Within	5.13	17	0.3	

Ftg – Fartlek Training Group, Ctg – Circuit Training Group

\*Significant At 0.05 Level Of Confidence

(The Table Value Required For Significance At 0.05 Level With Df=1 And 17 Is 4.45)

Table-2 Reveals That The Pre-Test Mean Of Fartlek Training Group And Circuit Training Group Are 5.53 And 5.49 Respectively And The Post Mean Of Fartlek Training Group And Circuit Training Group Are 6.69 And 6.80 Respectively. The Adjusted Post Test Means Of Fartlek Training Group And Circuit Training Group Are 6.69 And 6.81 Respectively. The Obtained F-Ratio Of 0.21 Which Is Lesser Than The Table Value 4.45 With Df 1 And 17 Required For Significance. The Study's Results Indicate That There Are No Significant Mean Differences In Muscular Endurance Between The Fartlek Training Group And The Circuit Training Group At The 0.05 Level. As A Result, It Is Evident That Neither The Fartlek Training Group Nor The Circuit

Training Group Significantly No Difference The Participants' Muscular Endurance.

## **2. Results**

The Results Of This Study Indicate That There Will Be No Significantly No Different Among The Both Circuit Training And Fartlek Training.

## **3. Discussion**

The Researcher Would Have Added The Control Group To Show The Real Significant Difference Between The Training Groups. It's Difficult To Determine The Impact Of The Training After Only Three Weeks Of Circuit And Fartlek Training. If The Training Lasts More Than Three Weeks, There Will Almost Certainly Be A Difference Between The Training Groups.

## **4. Bibliography**

- Baechele, T. A. (2000). In Essentials Of Strength Training And Conditioning (2<sup>nd</sup> Ed.). Human Kinetics. 152-182.
- Baker, D. A. (1999). The Relation Between Running Speed And Measures Of Strength And Power In Professional Rugby League Players. J Strength Cond Res, 13(2), 230-235.
- Beckham, S. A. (2000). Metabolic Cost Of Free Weight Circuit Weight Training. J Sports Med Phys Fitness, 40(2), 118-25.
- Eleckuvan, E. A. (2014). Effect Of Fartlek Training On Selected Physiological Parameters Among College Male Athletes. International Journal Of Physical Education, Fitness And Sports, 77-83.
- Hall, C. A. (2005). Therapeutic Exercise. In Moving Towards Function. Philadelphia: Lippincott Williams & Wilkins. 101-104.
- Mcardle, W. K. (2001). Exercise Physiology. In Energy, Nutrition, And Human Performance (165-172). Philadelphia: Lippincott Williams & Wilkins.
- Sayers, M. (2000). Running Techniques For Field Sport Players. Sports Coach, 23(1), 26-27.
- Vaithianathan, A. P. (2019). The Combined Effect Of Continuous Run, Alternate Pace And Fartlek Training On Selected Physiological Variables

Among Male Ahletes. Indian Journal Of Public  
Health Research And Development, 246-249.