

Effect of Circuit Training and Suryanamaskara for development of Explosive Strength among Basketball Players of Osmania University, Hyderabad

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Abstract ----The purpose of the present study is to find out the effect of Circuit Training and Surya Namaskars for development of Explosive Strength among Men Basketball Players. The sample for the present study consists of 60 randomly selected Subjected aged 18-21 years male basketball players of Osmania University Hyderabad out of which N=20 are experimental group I (Circuit Training) and N=20 group II (Surya Namaskars) and N=20 are controlled group. Circuit Training exercises such as Medicine Ball Throws, bounding, Shuttle run, tuck jumps, Pushups. Sit ups etc were given to experimental group I. And Surya Namaskar which consist 12 stages of different Asana's were given to Experimental group II on alternate days i.e., three sessions per week and controlled group were given the general training for six weeks. Pre-Test and Post Test were conducted in Standing Broad Jump Test to measure the Explosive Strength among experimental group I and Experimental Group II and controlled group. This study shows that due to the Circuit training and Surya Namaskars there is an improvement of experimental group I and Experimental Group II in the Explosive Strength and the controlled group is decreased in performance of Explosive Strength. It is concluded that due to Circuit Training exercises and Surya Namaskars Exercise there will be improvement in Explosive Strength among men basketball players.

Key Words: Circuit Training, Surya Namaskars, Explosive Strength, Standing broad jump

Article Received: 16th October, 2020; Article Revised: 30th December, 2020; Article Accepted: 08th January, 2021

Introduction:

Hardeep Kaur Saini (2016) ¹ study was to compare the effect of plyometric and circuit training programmed on explosive strength. For this study, one hundred twenty (120) male

basketball players were selected from Punjab, age ranging between 12 to 16 years. These players were divided into two groups: Experimental Group (n=60) and Control Group (n=60). The Explosive strength was measured before and after a six-week training period. The

players of Experimental group were trained for six days per week on alternative days (Plyometric Training on Monday, Wednesday and Friday whereas Circuit Training on Tuesday, Thursday, and Saturday), whereas Control Group did not participate in any training activity. The Explosive Strength was measured through standing broad jump. Mean and Standard Deviation of the standing broad jump were calculated. However, the Experimental Group showed a sign of improvement in standing broad jump that was significantly greater than Control Group. It was analyzed through statistical procedure by using 't-test'. Result of this study showed significant difference between Experimental and Control Groups in pre-test and post-test for dependent measurements ($p < 0.05$).

Satyanarayana Raju , Syam Babu (2016) ² studied the Effect of Circuit Training for Development of Endurance among Football Players of Andhra University .The sample for this study consists of 20 male football players of Andhra University out of which 10 are experimental group and 10 are controlled group. The circuit training comprises 6-10 strength exercises that are completed one exercise after another such as squat jumps, medicine ball throws, sit-ups, steps ups, hopping shuttles, skipping, and sit-ups were given to experimental group on alternate dayside., three sessions per week and controlled group was given the general training for six weeks. Pre- and post-tests were conducted in 12 min run cooper test to measure the endurance among experimental group and controlled group. This study shows that due to the circuit training there is an improvement of the experimental group in endurance, and controlled group is decreased in performance in endurance. It is concluded that due to circuit training there will be improvement in endurance among Football Players
Keywords: Circuit training, Endurance, Squat jumps

Milind V.Bhutkar and et all (2011) ³ studied The How Effective Is Sun Salutation in Improving Muscle Strength, General Body Endurance and Body Composition? Purpose of the present study was to evaluate effects of regular practice of sun salutation on muscle strength, general body endurance and body composition. Subjects (49 male and 30 female) performed 24 cycles of sun salutation, 6 days a week for 24 weeks. Upper body muscle strength was determined by 1 repetition maximum (1RM) for bench press and shoulder press technique. Back and leg dynamometry was used to assess strength of back and leg muscles. General body endurance was evaluated by push-up and sit-up tests. Body composition was assessed by noting% body fat by using bioelectric impedance analysis. Perceived intensity of exercise by subjects was noted by Borg scale.

II Method

The top N=60 Basketball players range from age group 18-21 years were selected randomly, after the selection of the subjects according to the aim of our research programmed the subjects divided in to the three groups, Experimental group I N=20 (Circuit Training) Experimental Group II N=20 (Surya Namaskar) and N=20 Controlled group for general training the criteria of selection basis on their Achievement at different level state,inter University, and national tournaments. Before the training begun explained the training schedule and training plan with subjects

Table 1

Dependent Variable	Intervention	Dependent Variable
<u>Pre-Test</u>	<u>Experimental Group</u>	<u>Post-Test</u>
<u>Circuit Training Exercise</u>	Basketball Players	<u>Circuit Training Exercise</u>
<u>Surya Namaskars</u>	<u>Controlled Group</u>	<u>Surya Namaskars</u>
<u>Standing Broad jump</u>	<u>General training</u>	<u>Standing Broad jumps</u>

Table 1 depicts the Variables used in the study, the Eight weeks of Basketball intervention and the assessment method applied. The eight weeks of study was based on previous studies that use eight weeks of intervention to conduct their research. Before the eight weeks intervention, all players underwent a two day assessment for pre-test. The experimental test sessions were conducted using the standing Broad jump with on-court assessment for the testing of Explosive Strength. The Experimental group I and experimental group II received the Circuit training and Surya namaskars training during the eight weeks of interventions and controlled group underwent the General training. After the eight weeks had undergo the Standing broad jump test assessment for experimental groups and controlled group.

III Assessment of Performance

The Experimental groups was engaged with an intervention based on Circuit Training and Surya Namaskars, which was employed for 8 weeks with three session per week. At the same time, the controlled group engaged in General training, They were tested on Standing Broad jump before the intervention and the performance Variable were retested again after the 8-week intervention programmed.

Standing Long Jump Test (Broad Jump)

The Standing Broad Jump also called as the Broad Jump, is a common and easy to administer test of Explosive strength.

Purpose: to measure the Explosive Strength

Equipment Required: Measurement tape to measure the distance jumped, non-slip floor to takeoff, and soft-landing area preferred. Commercial Long jump landing mats are also available. The takeoff line should be clearly mark.

Procedure: The Subjects Stands behind a line mark on the ground with feet slightly apart. A two-foot take-off and landing is used, with swing of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on the both feet without falling backwards. Six Attempts are allowed

This test conducted to Experimental group I, Experimental Group II and Controlled Group Pre test and Post test to know the Improvement in the Explosive Strength after given the training for 8 weeks, to Experimental Groups whereas Controlled Group done with the general Training.

IV Training Intervention

Training schedule for Experimental Group I (Circuit training)

Days	Exercises	Repetitions and Sets
Monday	Circuit Training with Continuous Method Pushups, Sit ups, High Knee	Continuous Method 3-4 Sets (No Recovery) Each Exercises

	Action Running, Dumb bell Exercises, Back Arches, Half Squat with Medicine ball, Money Walk, Sit ups, Heel Raising, Front Press with weight, Dumbbell Side ward Bend, Half Squat jumps	30 Sec. followed by other exercises immediately
Wednesday	Circuit Training with Interval Method Medicine Ball catching and Throwing up and down, Sit ups, Shuttle Runs, Back Press with Weights, Half Squat with Medicine ball, Pushups, Sit ups, Heel Raising, Bicep Cups with weight, Dumbbell Side ward Bend, Lunge	Interval Method 1 Min Sec. Exercises 30 Sec. Rest
Friday	Circuit Training with Continuous Method Pushups, Sit ups, High Knee Action Running, Dumb bell Exercises, Sit-ups, Half Squat with Medicine ball,	Continuous Method 3-4 Sets (No Recovery) Each Exercises 30 Sec. followed by other exercises immediately

	Push-ups, Bridge, Heel Raising, Front Press with weight, Dumbbell Side ward Bend, Burpee	
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Surya Namaskars: Surya namaskars or solution to the sun, is an important hatha yogic practices which has been handed down from the sages of Vedic timeseries Namaskars is almost a complete sadhana(practice)in itself, containing asana’s,prayanama,and meditational techniques within the main structure of the practices. The following table describing the benefits of Surya Namaskars

Stages of surya nama skar	Asana	Breath	Chakra	Benefits
Stage 1	Pranama sana	Inhale & Exhale	Anahata (Heart)	Induces essence s of calm and introspec tion
Stage 2	Hasta Uttanasa na	Inhale	Vishudhi (Throat)	Stretche s the chest & abdome n lifting the

				Prana to the upper body
Stage 3	Padahast asana	Exhale	Muladhara (Root)	Stretches the hamstring & blood flow to the Brain. Prana travels to the lower body
Stage 4	Ashwa Sanchalanasana	Inhale	Ajna (Third Eye)	Improves hip flexibility & stretches groin muscles
Stage 5	Adho Mukha Dandanasana	Hold breath in	Vishudhi (Throat)	Strengthens core abdominal muscles, arms, back & neck
Stage 6	Ashtangasana	Exhale	Swadhistana (spleen)	Increase blood flow to the chest and strengthens the

				arm&shoulders
Stage 7	Bhujangasana	Inhale	Muladhara (Root)	Relieves tensions in the lower back & give an expansion to the abdomen and chest
Stage 8	Parvatasana	Exhale	Vishudhi (Throat)	strengthens the arms shoulders legs & Stretches the calf muscle. increase blood flow to the brain.
Stage 9	Ashwa sanchalanasana	Inhale	Ajna (Third Eye)	Improves hips flexibility & stretches groin muscle.
Stage 10	Padahast asana	Exhale	Muladhara (Root)	Stretches the hamstring & blood

				flow to the Brain. Prana travels to the lower body
Stage 11	Hasta Uttanasa	Inhale	Vishudhi (Throat)	Stretches the chest & abdomen lifting the Prana to the upper body
Stage 12	Prana asana	Inhale & Exhale	Anahata (Heart)	Induces essence of calm and introspection

Training schedule for experimental group II
(Surya namaskar)

Days	General worm up exercise	Surya Namaskars Repetition
Tuesday	Walking, Slow jogging, rotation, arms rotation, hip rotation, jumping jack	SuryNamaskar 12(stages)x20sets Each set rest 40 sec
Thursday	Walking, Slow jogging, rotation, arms rotation, hip rotation, jumping jack	SuryNamaskar 12(stages)x30sets Each set rest 30 sec

	Breathing exercise, anulom vilom breath holding general stretching	
Saturday	Walking, Slow jogging, rotation, arms rotation, hip rotation, jumping jack Breathing exercise, anulom vilom breath holding and general stretching	SuryaNamaskar 12(stages)x40sets Each set rest 40 sec

V: Results and Discussion

The result of the study shows that due to the Circuit Training and Surya Namaskara there is improvement of experimental group I and experimental group II in the Standing Broad jump and controlled group I decreases in performance in standing broad jump due to the general training.

Table II

Mean, Standard Deviations, and One-Way Analysis of Covariance (ANCOVA) in Standing Broad Jump of Experimental and Control Groups

Note. *Significant (P<0.05).

Table II

The analysis of the data reveals that the subjects with the training have shown improvement in the performance of Standing Broad Jump from pre to posttest Mean S.D and One -way Analysis of Covariance pre-test result

shown (2.41) Circuit Training,(2.37) Surya Namaskar and Controlled group (2.34) after 8 weeks of training there is Improvement in the subject's (2.79) Circuit Training,(2.65 Surya Namaskar and Controlled group (2.33)

Table III
Sheffe's Post-hoc Test for the Differences among Adjusted Means of Experimental and Control Groups in Standing Broad Jump

Circuit Training	Surya Namaskar	Control Group	Mean Difference	p-value
2.75	2.65	----	0.10*	0.000
2.75	----	2.40	0.25*	0.000
----	2.65	2.40	0.35*	0.000

Note. *Significant (P<0.05)

Table III
Sheffe's Post-hoc Test for the Differences among Adjusted Means of Experimental and Control Groups in Standing Broad Jump shown the adjusted mean for Circuit Training 2.75 Surya namakar 2.65 and controlled group 2.40

VI: Conclusions

As for the practicality of this study which may applied when designing the Effective Training programmed for young basketball players, I clearly mention that both the training Circuit and Surya namaskar have shown extlent effect in the improvement Explosive Strength. Coaches will be able to analyzed the results and be able to enhance the future performances. At such feedback is very crucial for the improvement in performance athlete. I concluded the assessment process can be conducted every 3 months and 6 months to update the progress of players

performance and to ensure that it is up to date with the plyers training needs requirements .It is recommended that coaches assess their player's performance on a regular basis in order to ensure better compliance with the training programme.The aim of formulating the effect of circuit training exercise and Surya namaskar Exercise to betterment and Enhance their performance as well as guide line for basketball coaches at various level in preparing and designing quality and effective training programme.

Acknowledgment

The authors Sincerely thanks to Osmania University, Department of Physical Education for proving opportunity to carry out this Study. Authors Heartfully thanks to Chaitanya Bharathi Institute of Technology Hyderabad for special Research Grant and authors thanks to Basketball Association of Hyderabad for their support through out the study and authors would like to special Appreciation to the young Basketball players for their commitment and contribution as players in this research

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