IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

THE EFFECTIVENESS OF AGILITY DRILL TRAINING ON LOWER LIMB AGILITY AND BALANCE AMONG AMATEUR KATHAK DANCERS – AN EXPERIMENTAL STUDY

1Tejal Patil 2 Dr . Unika Purohit

1Intern 2 Associate professor

Modern college of physiotherapy, pune ,Maharashtra ,india

Abstract- This study has been undertaken to check the effectiveness of agility drill training on lower limb agility and balance among the amateur kathak dancers. Because kathak dance is highly spirited dance form in which the dancer makes the use of ghungroos (dance bells) to maintain body balance while performing spinning movements (chakras)and give rhythm to their performance. The aim is to improve the agility and balance of Kathak dancers using by the Illinois agility test and star excursion balance test among amateur kathak dancer .

Experimental study was performed from Oct 22 to April 23.A purposive sampling technique was applied to select 23 participants. The agility drill protocol was performed to assess the agility and balance in kathak dancer.

23 participants were included in the study. Paired t test was done. the result obtained for agility and balance on amateur kathak dancers suggest significant as p value obtained was (< 0.0001) and t value is significant of agility and balance .

This study shows the effectiveness of agility drill training on lower limb agility and balance among amateur kathak dancers.

Keywords – Amateur Kathak dance , agility , balance

I. INTERODUCTION

Kathak dance is highly spirited dance form in which the dancer uses ghungroos (dance bell) to maintain body balance while performing spinning movement (chakras)and giving rhythm to their performance. kathak is dance form that demand speed , flexibility , agility, dynamic balance , explosive power and ability to react and anticipate quickly. To ensure an efficient footwork pattern in kathak dancers require good agility , and good balance combined with a whole body coordination. Agility is the ability to change the body position efficiently and require the integration of isolated movement skill using a combination of

balance, coordination, speed, reflex strength and endurance. Agility is the ability to rapidly changes directions without the loss of speed, balance or body control. Balance is s the ability to maintain the body center or gravity over its base of support with minimal sway or maximal steadiness. dynamic balance is defined as the ability to maintain postural control during movement such as reaching for an object or walking on various surfaces. This study aimed to determine the effectiveness on lower limb agility and balance in amateur kathak dancers.

II. NEED OF STUDY

Kathak is one of the eight major forms of Indian classical dance. In kathak people move in all different directions, jump & turn .The body needs to be agile to help control the weight of the body motion and help the body maneuver quickly.

In kathak there are sudden rotatory movements and sharp turnings of head, therefore balance is important to maintain the posture of the body for long duration. Balance and posture maintenance is the core of this dance form and agility is required to change the focus quickly.

The beginner level kathak dancers have a 7 month period for their 1st level kathak exam. Till 3rd level (14 to 15 months), the dancers do not develop his/her complete agility and balance required for the 3rd level exam. So, the aim of the study was to assess how much agility and balance dancers develop till 1st level Kathak Exam, in order to improve their performance faster after giving agility training.

III. AIM

AIM: To check the effectiveness of agility training on lower limb agility and balance among amateur kathak dancers.

IV. OBJECTIVE

- To study the effectiveness of agility training on lower limb agility using Illinois agility test among amateur kathak dancer.
- To study the effectiveness of agility training on balance using star excursion balance test among amateur kathak dancer

V. HYPOTHESIS

Null Hypothesis-

There will be no effect of agility training on lower limb agility and balance in amateur kathak dancers

Alternate Hypothesis (H1) -

There will be significant effect of agility training on lower limb agility using Illinois agility test among amateur kathak dancers.

Alternate Hypothesis (H2) -

There will be significant effect of agility training on balance using star excursion balance test among amateur kathak dancers.

VI. MATERIAL AND METHODOLOGY

STUDY DESIGN: Pre-post Experimental

SAMPLING SIZE: 23

SAMPLING METHOD: Convenient Sampling

STUDY POPULATION: Amateur kathak dancers

STUDY SETTING: dance academy in and around Pune

STUDY DURATION: 6 Week

INTERVENTION: alternatively 3 days /week; 45min /session.

VII. CRITERIA

INCULSION CRITERIA-

1) Age – 8-18 year
2) Participant – female and male
3) Beginner (First level exam)

EXCULSION CRITERIA

1) Recent musculoskeletal injury like fracture, soft tissue injury or dislocation of the lower extremity.

2) Spinal cord injury

3) Postural deformity

4)Ankle sprain

5)chronic pain

VIII. MATERIAL USED

a. Pen

b. Paper

c. Tape

d. Non elastic measuring tape

e. Marking Cones

f. Consent form

g. Data collection sheet

h. Flat non slip surface

i. Stopwatch

j. Timing gate

IX. OUTCOME MEASURES

Illinois Agility TEST:

Procedure

Participants should lie on their front (head to the start line) and hands by their shoulder. On the GO Command the stopwatch is started , and the athletes gets up as quickly as possible and runs forwards 10 meters then runs up and back through a slalom courses of four cones .finally the athletes runs another 10 meter up and back past the finishing cone at which the timing is stopped . Several trials should be completed with the best score.

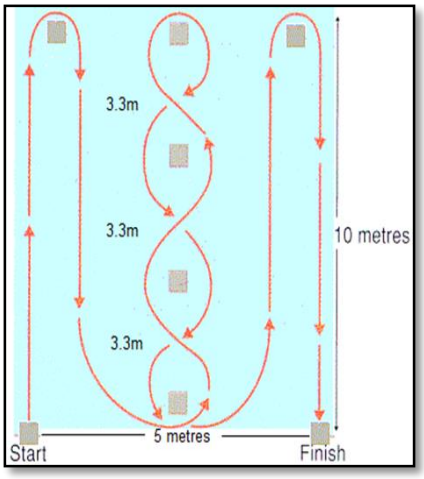


Fig 1 and 2 Illinois agility test

Star excursion balance test

The star balance test is tool to assess the dynamic balance healthy people and athletes. The star excursion balance test incorporated a single leg stance with maximum reach of opposite leg .The SEBT has acceptable to excellent reliability between 0.84 and 0.92participant performance the SEBT while standing at the center of grind placed on the floor with eight lines extending at 45 degree increment from the center of grid .The line positioned on the grid were labeled according to direction

The stance leg

Anterior, anteriomedial, anterolateral posteromedial posterior ,posteriolateral and lateral Participant lightly touched the further point possible on the line with the further part of the reach leg while maintaining balance .participant then returns to a bilateral stance while maintaining equilibrium. The distance from the Centre of grid to touch point was measured with greater reach distance indicating better balance. Each directional reach was practiced six time followed by three testing reach that were averaged for statistical analysis.

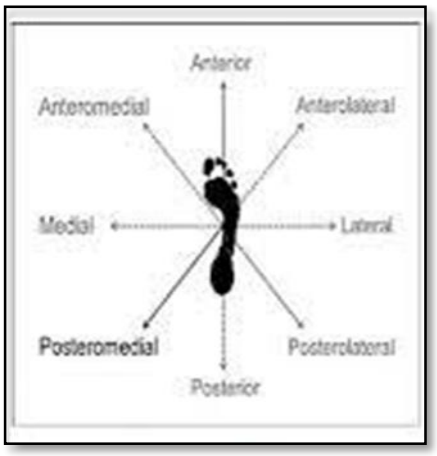


Fig 2 and 3 star excusion balance

X. PROCEDURE

- The study was done with a synopsis presentation in front of the ethical committee in PES Modern college of physiotherapy ethical clearance was obtained from the committee.
- Subjects were selected according to the inclusion and exclusion criteria
- The study was explained to the subjects individually and written consent was taken from them.
- Demographic data will be recorded for data collection.
- Illinois agility test for agility and star excursion balance test for balance
- The agility protocol will be given 6 week 3 days/week ; 45 min per session
- Pre and post protocol data was collected and data analysis is done

XI. PROTOCOL

TIME SESSION	AGILITY TRAINING	SET/REPETITON
Week 1 (day1-3)	20-yard shuttle	3set of 10 repetitions
	30-yard T-drill squirm	
	40- yard sprint	
	40-yard backpedal – forward	
Week 2(day 4-6)	Same as week 1	5 set of 10 repetitions
Week 3(day7-9)	40-yard square –carioca	3set of 10 repetitions
	15-yard turn drill figure Eights	
	Z-Pattern run	
	Zigzag	
Week 4 (day10-12)	Same as week 3	5set of 10 repetitions

Week5(day13-15)	40-yard square drill-sprint – leg hop, backpedal	3 set of 10 repetition
	Star drill –sprint ,backpedal ,shuffle	
	5-cone snake drill	
Week 6 (day 16-18)	Same as week 5	5set of repetition

Table no 1 agility drill protocol

Fig no 5 and 6(5 cone run)

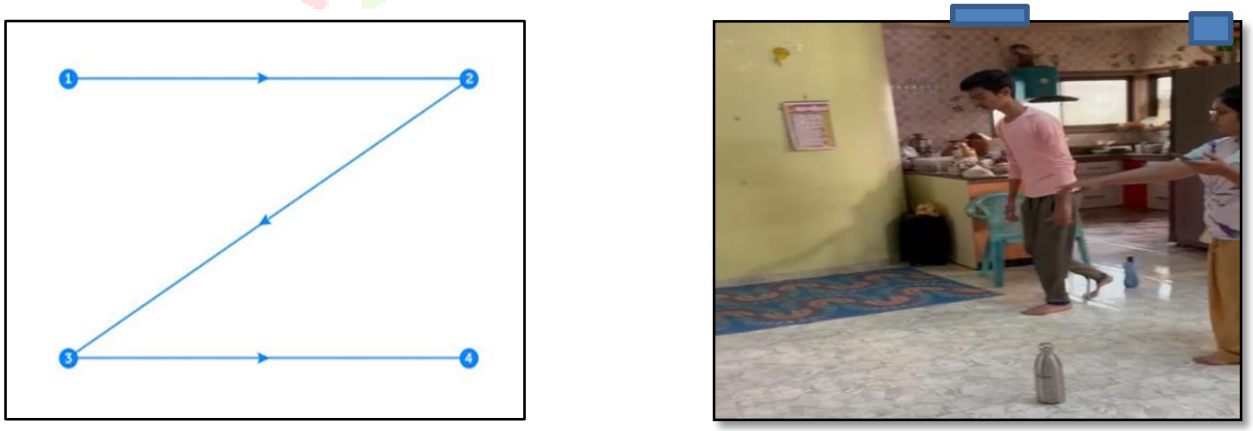
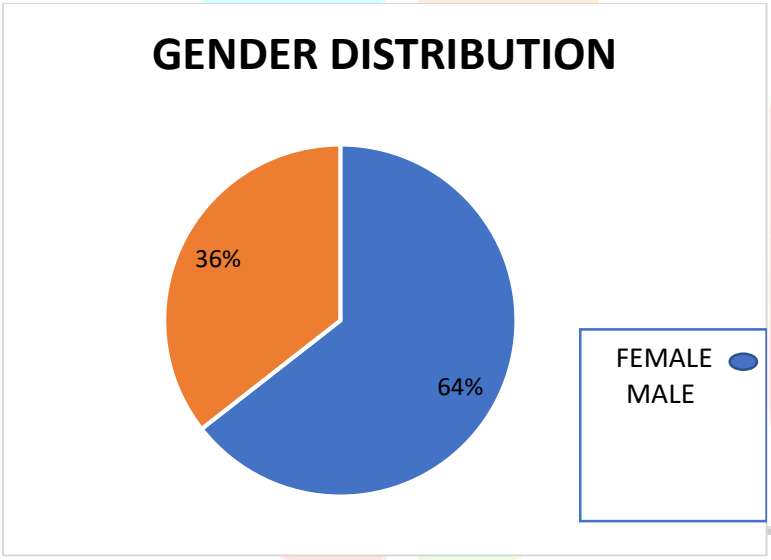


Fig no 6 and 7 zig zag run

XII . DATA ANALYSIS

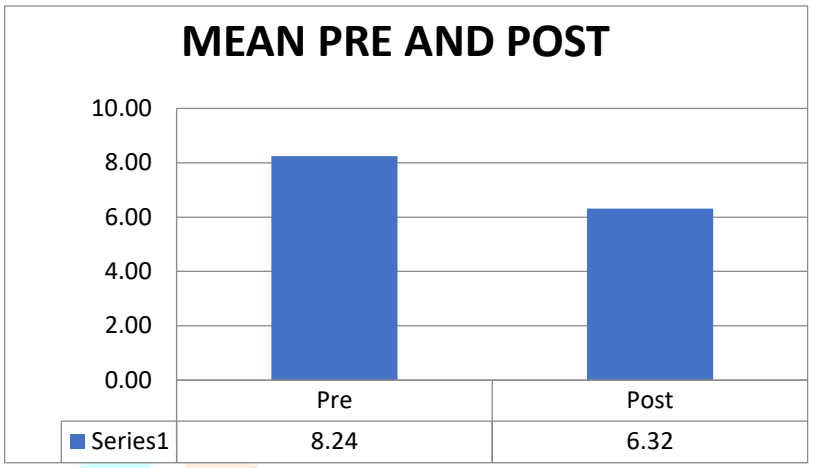
- The study included 23 participates both girls and boys age 8-18 year old . The subject taken their pre post agility and balance was calculated using star excursion balance test and Illinois agility test . The training was carried out 3days/ week for 6 week.
- The data collected was statistically analyzed using Microsoft Excel sheet and Graphpad.com.
- Effectiveness of agility drill training on lower limb agility and balance among amateur kathak dancer .
- Paired t test was used to get the difference between pre and post .
- The various statistical measures such as mean, standard Deviation (SD) and test of significance were utilized to analysis the data . The results were concluded to be statistically significant if ,p value is less than 0.0001 the data was represented in both tabular and graphical format.



PARAMETERS	PRE TEST		POST TEST		T VALUE	PVALUE	RESULT
AGILITY TEST	MEAN	SD	MEAN	SD	7.03	<0.0001	EXTREMELY SIGNIFICANT
	8.61	1.92	6.62	1.43			

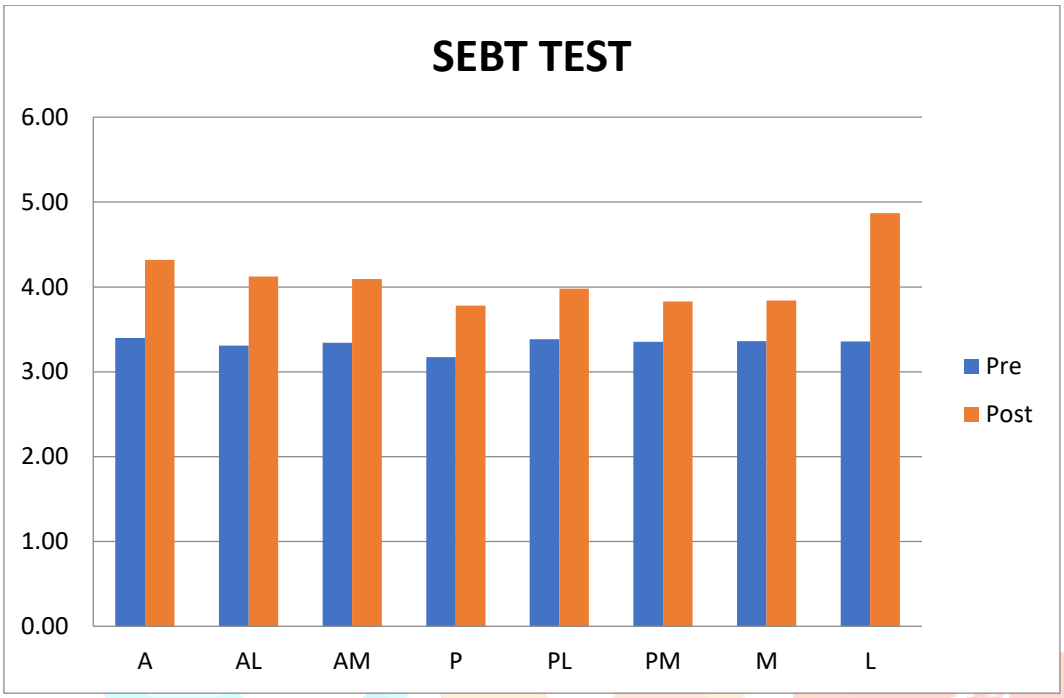
Table no.1- The comparison of pre post agility value using Illinois agility test

RESULT IN THIS GRAPH OF COMPARISON OF PRE AND POST OF AGILITY ILLINOISE TEST . THERE IS PRE AND POST RESULT PRE IS 8.24 AND POST IS 6.32 .P VALUE IS<0.0001 AND T VALUE IS 7.03 AND RESULT IS EXTREMELY SIGNIFICANT



Graph no 1

Table no 2 : comparison of pre and post balance value using SEBT test



GRAPH NO 2

PARAMETERS					T VALUE	P VALUE	RESULT
SEBT	MEAN	SD	MEAN	SD			
A	3.40	0.84	4.31	0.71	11.54	<0.0001	Significant
AL	3.30	0.76	4.11	0.69	13.79	<0.0001	Significant
AM	3.34	0.80	4.14	0.70	12.85	<0.0001	Significant
P	3.20	0.83	3.79	0.77	8.33	<0.0001	Significant
PL	3.38	0.75	3.97	0.73	8.84	<0.0001	Significant
PM	3.35	0.74	3.83	0.71	9.43	<0.0001	significant
L	3.34	0.83	3.85	0.68	9.67	<0.0001	Significant
M	3.37	0.85	3.84	0.67	7.56	<0.0001	significant

RESULT OBTAINED FOR LOWER LINB BALANCE TO INCREASE LOWER LINB BALANCE IN KATHAK DANCER BALANCE VALUE MEASURE BY STAR EXCURSION BALANCE TEST THERE IS TWO GEOUP PRE AND POST AND THERE IS 8 DIAGONALS (A,AL, AM, P, PL ,PM,M,L)

XII. RESULT

- 23 Participants were included in the study.
- Paired t test
- The result obtained for lower limb balance and agility in amateur kathak dancer measure by Illinois agility test and star excursion balance test suggests significant as p value obtained was (<0.0001)and t value was in agility 7.03 and in balance

XIII. DISSCUSION

The aim of the study was to see the effectiveness of agility drill training on lower limb agility and balance among amateur kathak dancer .Total 23 participant of age 8-18 were trained for 6 week to find effectiveness of agility drill training on lower limb agility and balance.

In this study I assess the kathak dancer agility and balance in first level but daily kathak dancer develop the agility and balance in 3 rd level so that my study is more effective to student to develop the agility and balance in early level.

Closed kinetic chain motion at the ankle, knee and hip must be adequately controlled by lower extremity musculature in order to execute the dynamic balance and agility. Agility involved both movement and reaction to the stimulus whereas the change the direction is the movement component of agility in isolation.

When we speak about agility in kathak dancer we not only refer cognitive component that are involved in different task like (antipodal position ,turning ,twisting position)that are more differently than more complex and un predictable task in kathak dancer Agility movements involves perceptual component like decision making and anticipation in all process of dance .

A comprehensive definition of agility would recognize the physical demand (strength and condition in) cognitive process (motor learning)and technical skill (biomechanics) involved in agility performance.

Dynamically added weight significantly increased body sway in both mideo lateral and anterior-posterior direction again indicating instability but with greater use of counter rotation segmental mechanism.

Indian classical dance forms involve interaction between the visual system (bhavang)vestibular system (chakkar and spins)and proprioceptive system (tatkkar or footwork).As a result of the engagement of these three system which are considered to be an important element of the neuronal system in achieving balance . Indian dancer demonstrated greater standing balance performance than age matched non dancers.

The postural control measurements obtained during standing after performing whole-body turns displayed a different tendency than did the other standing conditions. As the vestibular system plays an important role in balance, posture, and dynamic motion through space, the whole-body turns served in the present study as a

specific vestibular manipulation.

While performing "THAAT"(subtle graceful poses)classical dancer focus on stationary spot in front of them while maintaining an erect posture

Pre and post assessment result of balance and agility test in male and female after follow the protocol found that p value is less than 0.0001 which is consider extremely significant .

According to clovert sorn the performance of the men and women in the any direction before and after the protocol there is no difference in performance between sex.

External conditions of lighting and support surfaces in kathak training vary, so dancers may be better able to use information obtained from the somatosensory and vestibular systems

XIV. CONCLUSION

- There is significant effect of agility drill training on lower limb agility and balance

XV. LIMITATION

- Lack of long term follow up

XVI. FUTURE SCOPE OF STUDY

- The study can be used to see agility and balance performance of other dance form as well.
- Training for long time period might help get better balance.
- The study could be conducted all over the Maharashtra.
- In the future their will be comparer study between male and female.

XVII. REFERENCE

1)Alricsson M, Harms-Ringdahl K, Eriksson K, Werner S. The effect of dance training on joint mobility, muscle flexibility, speed and agility in young cross-country skiers–a prospective controlled intervention study. Scandinavian journal of medicine & science in sports. 2003 Aug;13(4):237-43.Sheppard JM, Young WB. Agility literature review: Classifications, training and testing. Journal of sports sciences. 2006 Sep 1;24(9):919-32.

2)Chandrakumar N, Ramesh C. Effect of ladder drill and SAQ training on speed and agility among sports club badminton players. International Journal of Applied Research. 2015;1(12):527-9.

3)Pojskic H, Pagaduan J, Uzicanin E, Separovic V, Spasic M, Foretic N, Sekulic D. Reliability, validity and usefulness of a new response time test for agility-based sports: A simple vs. complex motor task. Journal of Sports Science & Medicine. 2019 Dec;18(4):623.

4)Gamble P. Training for sports speed and agility: an evidence-based approach. Routledge; 2011 Sep 12

5)Young WB, Dawson B, Henry GJ. Agility and change-of-direction speed are independent skills: Implications for training for agility in invasion sports. International Journal of Sports Science & Coaching. 2015 Feb;10(1):159-69.

6)Dawes J, editor. Developing agility and quickness. Human Kinetics Publishers; 2019

7)Sekulic D, Spasic M, Mirkov D, Cavar M, Sattler T. Gender-specific influences of balance, speed, and power on agility performance. The Journal of Strength & Conditioning Research. 2013 Mar 1;27(3):802-1

8)Lloyd RS, Read P, Oliver JL, Meyers RW, Nimphius S, Jeffreys I. Considerations for the development of agility during childhood and adolescence. Strength & Conditioning Journal. 2013 Jun 1;35(3):2-1

9) Craig BW. What is the scientific basis of speed and agility?. Strength & Conditioning Journal. 2004 Jun 1;26(3):13-4.

10)Chandrakumar N, Ramesh C. Effect of ladder drill and SAQ training on speed and agility among sports club badminton players. International Journal of Applied Research. 2015;1(12):527-9.

11)Zhang J. RETRACTED ARTICLE: Structure of plain granular rock mass based on motion sensor and movement evaluation of

12)dancers. Arabian Journal of Geosciences. 2021 Aug;14(15):1-3.

13))Crotts D, Thompson B, Nahom M, Ryan S, Newton RA. Balance abilities of professional dancers on select balance tests. Journal of Orthopaedic & Sports Physical Therapy. 1996 Jan;23(1):12-7.

14)Costa MS, Ferreira AD, Felicio LR. Static and dynamic balance in ballet dancers: a literature review. Fisioterapia e Pesquisa. 2013;20:299-305.