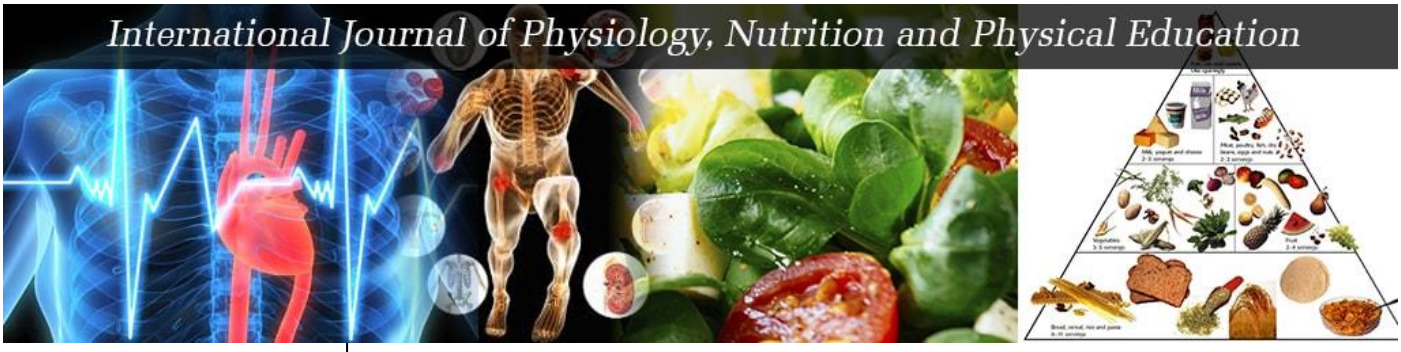

ISSN: 2456-0057
IJPNPE 2022; 7(1): 343-345

www.journalofsports.com
Received: 07-11-2021
Accepted: 09-12-2021

Tulsidas Udiyapuram
Ph.D. Scholar, Department of Physical Education and Sports, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur, Chennai, Tamil Nadu, India

Dr. Arnab Ray
Assistant Teacher in Physical Education, Lalgola M N Academy, Lalgola, Murshidabad, West Bengal, India

Corresponding Author:
Tulsidas Udiyapuram
Ph.D. Scholar, Department of Physical Education and Sports, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur, Chennai, Tamil Nadu, India

Impact on jump and dribbling performance via core stability muscle group training on college basketball players

Tulsidas Udiyapuram and Dr. Arnab Ray

Abstract
The word "core-stability" refers to a person's ability to stabilize their core. It is an ability to control position and movement of core, while Physical activity refers to any movement produced by skeletal muscles that increases energy expenditure above basal level. The ability of core to maintain control of body and movements can be contributing to the ability to have greater physical activity and vice versa thus aim of this study was to describe the effects of integrative core stability training on jump and dribbling performance in college basketball players for which 40 college men basketball players were selected from the Nellore District of Andhra Pradesh age ranged between 18years to 25 years. The 40 men basketball players are divided in two groups Experimental Group and Control group. The training program was monitored for 4 weeks, with a total of 8 sessions (biweekly, 1 hour each). Based on the muscle group various assessments are planned and collected the data. The EG obtained significant differences in the pre-post comparison in the side hop left limb (0.05) and right limb (0.001), in left and right 6m timed hop test (p<0.0005). The results of the T-test for independent data show intergroup differences in the post-test (GS vs GC) statistically significant in 6 meters hop (p<0.001, ES: 0:56). The GC showed significant improvements only in vertical jump (p<0.01).

Keywords: Core-stability, experimental group, training schedule

Introduction
The Core strength is an important precondition for many sports, such as football, basketball, jumping in track and field, to provides a correct posture and to carry out some daily activities such as walking, climbing stairs, downing a step . The district of the Core, has the role of controlling and stabilizing the lumbosacral region, and allows as a connection between the upper and lower part of the body (Akuthota *et al*., 2008; Andorlini, 2013a) [3, 5]; this functional unit is able to distribute the forces which are generated by the lower or upper limbs (Andorlini, 2013a, b) [5, 6], as well as demonstrated in soccer training (Afyon, 2014) [2].
To satisfy these two functional requirements, as part of the training methodology, it can identify two different types of training: the core stability tasks have the purpose of control and stability lumbar spine increase; the core strength tasks are intended to allow the transfer of high levels of strength and muscle power, activating local stabilizers and global mobilizers muscles (Faries & Greenwood, 2007)
So far, the literature has mainly addressed the effectiveness of core stability exercises in athletes or in physically active adults, with special reference to low back pain (Abenhaim *et al*., 2000; [14] and performance, or to the core training programs effects
The relationship between the Core stability and sports performance, however, is less clear, and studies are less numerous: it is understood as exercises of Core Stability reduce back pain in sport (Durall *et al*., 2009; Allen *et al*., 2014) [10, 4], it may increase balance performance in cross-country skiers , and performance in the jumping, throwing and sprint.
In the literature there are no studies that have only monitored the core stability training effects; in fact the Core stability exercises have always been associated and integrated with strength lower limb exercises.
Therefore, an open question remains about what the understanding of the effects on motor performance due only to core stability exercises.

With the development of modern scientific theory and technology, the core strength training in basketball sports becomes more and more important, which is one of the effective ways of making the physical training of basketball players scientific, reasonable and high-efficient. Actually, in basketball sports, many technical actions cannot leave the core strength training. The basketball players can keep the solid body posture in the basketball sports only when they have strong core strength. The core strength training can help basketball players solve the problem concerning the power transmission and generation of core areas or links in traditional strength training, make the body of players in a more coordinated state, and solve the problem concerning body imbalance in the original strength training, thus beneficial to improve the technical action completion level and ability of basketball players. Therefore, to further shorten the gap with the basketball players of developed countries all over the world, the basketball players should be of core strength training by using the scientific training method.

Methodology

This study aimed to describe the effects of integrative core stability training on jump and dribbling performance in college basketball players. The study included 40 college basketball men players (mean age 19,height 144 cm, weight 50 kg); the sample was divided in Experimental Group (EG, n=20) and Control Group (CG, n=20). Written informed consent was obtained from all subjects.

To assess the lower limbs strength have been used monopodalic jumps:, side hop test, triple hop test and 6 meters timed hop test. The side hop and triple hop provide the jump distance; the 6 meters timed hop test provides evaluates the time spent to reach a distance of 6 meters through fast monopodalic bounds. To assess the explosive strength was used a Seargent vertical jump.

To assess the Dribbling, Basketball BSAT (Basketball Skill Assessment Test) Dribbling test was used.

Descriptive statistics (M ± SD) were calculated for all assessed variables; Student's paired t-test was used to verify the existence of statistically significant differences between the average values obtained. The significance was set at $p<0.05$.The Effect Size was calculated using Cohen's *d* (Cohen, 1992) [9].

Training Procedures

The training program was monitored for 4 weeks, with a total of 8 sessions (biweekly, 1 hour each); EG followed the drills basketball and techniques introduced in the initial warm up 4 core stability exercises (Table 1).

Table 1: Experimental and Control Group training sessions

Group	Session 1	Session 2-5	Session 6-9	Session 10
EG	Evaluation	Core Stability (Stability condition)	Core Stability (Unstable Condition)	Evaluation
CG	Evaluation	Basketball Drills	Basketball Drills	Evaluation

Four sessions are provided exercises on the ground (stability condition) and four session are provided on unstable surfaces (instability condition); the exercises are described in Table 2.

Table 2: Four sessions are provided exercises on the ground (stability condition) and four session are provided on unstable surfaces (instability condition)

Core stability Training Design	Assessment T0	4 sessions Core Stability (Physical Fitness exercises)	4 sessions Core Stability (Unstable Condition)	Assessment T1
		Forearm Plank on the ground 3 rip x 15 sec. isometric contraction x 15 sec break Side plank on the ground 3 rip x side x 15 sec isometric contraction Side plank (dynamic execution) 4 x 8 rip x side Mountain climb 3 rip x 15 sec	Plank with hands on unstable tools 3 rip x 15 sec break x 15 sec isometric contraction Side plank static 3 rip x side x 15 sec isometric contraction on unstable surface Side plank dynamic execution) 3 rip x side, with lower limbs on unstable surface Mountain climb 3x6 rip x limb, with lower limbs on unstable surface	

The initial and final assessment was conducted in the two lessons that preceded and followed the 8 training sessions planned. The CG has followed the simple basketball drills and specific sport exercises.

Results

The EG obtained significant differences in the pre-post comparison in the side hop left limb (0.05) and right limb (0.001), in left and right 6m timed hop test ($p<0.0005$). The results of the T-test for independent data show intergroup differences in the post-test (GS vs GC) statistically significant in 6 meters hop ($p<0.001$, ES: 0:56). The GC showed significant improvements only in vertical jump ($p<0.01$).

Table 3: Results

	GS			GC		
	T0 M±SD	T1 M±SD	P Value	T0 M±SD	T1 M±SD	P Value
Side Hop left	36.55±6.327	38.98±5.710	0.046*	38.60±4.940	39.13±5.325	0.207
Side Hop right	37.21±6.512	39.27±5.738	0.001**	39.11±4.881	39.90±4.873	0.068
6M T. H.left	5.822±0.871	4.44±0.936	0.000***	5.134±0.3367	5.187±0.315	0.126
6M T. H. right	5.778±0.766	4.42±0.877	0.000***	5.455±0.633	5.122±0.684	0.919
Triple Hopleft	122.43±7.610	123.79±7.820	0.313	121.77±10.397	122.60±9.629	0.452
Triple Hop right	122.93±10.436	122.67±8.469	0.360	120.83±9.774	120.99±8.949	0.373

Searg	13.77±2.520	14.87±2.642	0.094	13.10±2.513	14.73±2.576	0.006**

Legend: 6M.T.H= & meters Timed-Hop Test; Searg = Sergent Test

Discussion

The hypothesis of the study was to evaluate the effects of core stability training on the jump performances in basketball players. This is the first study to describe the effects of core stability training on jumping performance in college basketball players. The integrated core stability program was introduced in the warm-up period of each lesson and has provided a difficulty and an intensity increase, from tasks performed on the ground and tasks on unstable surfaces. All tasks requiring the trunk control both with the body resting on the ground, with either a tools which gave instability, as indicated in the literature (Faigenbaum *et al*., 1999; Behm& Anderson, 2006; Granacher *et al*., 2014;). The significant differences obtained in the pre-post comparison test in GS have characterized the monopodalic jump tests, the 6m-timed hop test. The jump performance, with particular reference to those performed in monopodalic, affected by the control of the trunk and pelvis: these districts that confer stability to the extensor musculature of the lower limb and hip, deputed to jump. The results of t-test between the two groups in the post test return in tests of 6m-timed hop test an effect size 0.56, confirming the effectiveness of core stability exercises on jumping tests. The results of this study are consistent and in line with similar studies that have described the effects of the core training on vertical jump performance in young players (Afyon, 2014) [2]. The results obtained in this study, however, disagree with the results of another study that did not identify a significant correlation between core stability performance and sport-specific performance for tennis the study on young tennis players, however, has only investigated the correlation but not the effects of core stability training. The values identified in this study, lead to hypothesize that the supplementary program of core stability, however, requires the introduction of additional tasks in the warm up, if you want to get the higher effect size values or significant values in all assessment tests. The study ultimately confirms the need to assume additional sessions in college sports destined to strength, as well as the literature suggests already for several years (Faigenbaum *et al*., 1999, 2005)

Conclusions

The study highlights the core stability program effectiveness on jump ability in college basketball players. Today College, boys, and girls more early choose their sport: therefore, sports practice should aim to protect the young practitioners health and to reduce the overloading training risk (Brenner, 2016; [8]. The assessment of these prerequisites in the players must lead the technical and medical staff to consider the advisability of integrative session and exercises in the process of introduction to the sport aimed at reducing the injury risk.

Future Scope

Future studies may investigate whether core stability programs can increase speed and endurance performances in basketball players.

References

1. Abenhaim L, Rossignol M, Valat JP, Nordin M, Avouac B, Blotman F. The role of activity in the therapeutic management of back pain. Report of the International Paris Task Force on Back Pain Spine. 2000; 25(Suppl. 4):1S-33S.
2. Afyon YA. Effect of core training on 16 year-old soccer players. Educational Research and Reviews. 2014;23:1275-1279.
3. Akuthota V, Ferreiro A, Moore T, Fredericson M. Core stability exercise principles. Curr Sports Med Rep. 2008;7:39-44.
4. Allen BA, Hannon JC, Burns RD, Williams SM. Effect of a core conditioning intervention on tests of trunk muscular endurance in school-aged children. J Strength Cond Res. 2014;28:2063-2070.
5. Andorlini A. Muovere l'allenamento. Ed. Correre Milano, 2013a.
6. Andorlini A. Allenare il movimento. Ed. Calzetti-Mariucci Perugia, 2013b.
7. Behm DG, Anderson KG. The role of instability with resistance training. J Stength Conditioning Research. 2006;20:716-722.
8. Brenner JS. Sports specialization and intensive training in young athletes. Pediatrics. 2016;138(3):e1-e8
9. Cohen J. A power primer. Psychological Bulletin. 1992;112:155-159.
10. Durall C, Udermann B, Johansen D, Gibson B, Reineke D, Reuteman P. The effects of preseason trunk muscle training on low-back pain occurrence in women collegiate gymnasts. J Strength Cond Res. 2009;23:86-92.
11. Faigenbaum AD, Westcott WL, Loud RL, Long C. The effects of different resistance training protocols on muscular strength and endurance development in children. Pediatrics. 1999;104:e5.
12. Faigenbaum AD, Bellucci M, Bernieri A, Bakker B, Hoorens K. Acute effects of different warm-up protocols on fitness performances in children. J Strength Cond Res. 2005;19:376-381.
13. Faries M, Greenwood M. Core Training: Stabilizing the confusion. National Strength and Conditioning Ass. 2007;29:10-25.
14. Granacher U, Schellbach J, Klein K, Prieske O, Baeyens JP, Muehlbauer T. Effects of core strength training using stable versus unstable surfaces on physical fitness in adolescents: a randomized controlled trial. BMC Sports Science, Medicine, and Rehabilitation. 2014;6:40.