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TRAINING OUTCOMES OF PLYOMETRICS TRAINING WITH YOGIC PRACTICES ON SELECTED MOTOR FITNESS VARIABLES AMONG MALE GYMNASTS

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Abstract

The purpose of this study was to determine the training outcomes of Plyometrics with Yogic practices on selected Motor fitness variables to achieve the purpose of the study 30(12 to 18) years old male gymnasts were selected from various schools in Trichirapalli, Tamilnadu. The subjects were divided in to two groups, group I was treated as a experimental group-1 (n15=plyo with Yoga), group II was (n15=control group) did not perform any training. The students in the experimental group took training for 12weeks and six days a week (one hour each) at National College Indoor Stadium, Trichy, Tamilnadu. The control group maintained their daily routine activities and no special training was given. The collected means and standard deviations for each parameter are given In the comparison of the motor tests for pre and post test scores in experimental group Explosive Strength, t=6.76 ($p< 0.01$); Core Strength & Stability, t.4.67 ($p<0.01$); Flexibility, t=9.65 ($p<0.01$); Balance, (t=5.54,$p<0.01$); Speed, (t=3.91, $p<0.01$); Muscular Endurance, t=5.45 ($p<0.01$); Abdominal muscular endurance, t=3.32 ($p<0.01$); Strength endurance, t=3.46 ($p<0.01$). The comparison of the motor tests for pre and post test scores in control group the following are obtained: for Explosive Strength, t=0.305 ($p> 0.05$); Core Strength & Stability, t.1.456 ($p>0.01$); Flexibility, t=0.201 ($p>0.05$); Balance, (t=0.051,$p>0.05$); Speed, (t=0.325, $p>0.05$); Muscular Endurance, t=0.60 ($p>0.05$); Abdominal muscular endurance, t=0.624 ($p>0.05$); Strength endurance, t=1.477 ($p>0.05$).The study shows that combination of plyometric training with yogic practices were significantly developed motor performance variables when compared to the control group ($p>0.05$) among male gymnasts.

Key Words: Plyometric, yogic exercises, motor performance, children.

Introduction:

Various forms motor activity plays an essential role in the process of Physical education (Lucertini at al., 2012; Haga, 2008). There is a large number of factors like physical activity that influence the growth and development of the children (Malina et al., 2004; Lopes et al., 2011). The motor development and sports skills of pupils have been considered important in the PE curriculum (Haga, 2008). The importance of different forms of sports has been emphasized for pursuing life-long physical activity and for the versatile development of fitness and motor abilities (Pehkonen, 2004;). Motor ability to execute different acts, including coordination of both fine and gross motor skills (Haga 2008; Gallahue and Ozumun, 2006). Some of the existing motor fitness typically focus on Balance, agility, speed, muscular strength and endurance (Fjortoft et al., 2011; Haga, 2008; Balas and Bunc, 2007). Versatile exercise contents like gymnastics are highly suitable for the development of these characteristics (Pajek et al., 2010; Werner et al., 2012. From the perspective of the child development, gymnastics is one of the key sports as any physical exercise on the floor or apparatus that offers a great range of locomotive, stability and body control movements which are highly important for development of children (Pajek et al., 2010). Gymnastics requires a great diversity of movement; transitions from dynamic to ststic elements and vise versa, frequent changes of the body position in space (Culjak et al., 2003; Bressel et al., 2007).

Plyometric is used in many sports as an effective way to increase speed of movement and power. For gymnasts plyometric is most commonly worked to develop “punch” power for tumbling and vault (Auferoth et al., 1986). The punch, for a punch front somersault, is, in itself, a plyometric exercise. For gymnasts plyometrics are important to strength training in order to develop explosive power (Adams et al., 1984).Practicing yoga along with Gymnastics: Gymnasts can certainly benefit by adding yogic methodology to their training routines. Many athletes find that a yoga routine complements regular workouts well. The gentle nature of yogic practices will provide a balance to the rigorous muscle workouts often performed by gymnasts. The stretches make sure that muscles remain long and agile instead of becoming tight and shortened from overuse. Yoga will also provide a number of other benefits of Gymnasts.

MATERIALS AND METHODS

Subjects

Thirty subjects were (12 to 18) years old boys, all of whom were second grade students from various schools, taking regular practice at indoor stadium, National College, Trichy, Tamilnadu. The subjects were carefully chosen those who are coming for the regular practice. Before the study, participants and parents were given written information about the nature of the study. Written permission was obtained from the parents prior to their child’s involvement in the study. Parents and subjects were told that they were free to quit the test whenever they wanted. No child had any reported history of learning difficulties or any behavioral, neurological or orthopedic problems that would quality as exclusionary criteria for this study.The students were divided in to two groups as control group (N=15, X=12 to 18 years old) and Experimental group (N=15, X=12 to 18 years old).

Procedure

All applications and tests were carried out at the national college, Indoor stadium, Tiruchirappalli, Tamilnadu.Motor performance tests: the day before the test, the motor test battery was introduced to all the students, who did three trails. The students were encouraged to show maximum efforts in all tests. If a subject made a procedure error during tests, instructions and demonstration of the task were repeated, before the child made a new attempt.

Table 1. Training Program for Experimental Groups

S.NO	NAME OF THE GROUPS	DURATION	FREQUENCY
1	Group – I (Plyometric with Yoga training)	1 hr	six days per week
3	Group – III (Control Groups)	Not exposed to any experimental training	

Table 2.selection of performance variable and their criterion measures

S.No	Practical content	Variables	Criterion measures
1	Standing Long Jump (cm)	Explosive Strength	Standing Long Jump
2	Trunk Lift (cm)	Core Strength & Stability	Core Strength & Stability
3	Sit and reach (cm)	Flexibility	Sit & Reach
4	Balance (Sec)	Balance	Standing Stroke test
5	Run 20m (sec)	Speed	20 m Sprint
6	Chin up (arm & shoulder)	Muscular Endurance	Chin up test
7	Curl up (abdominal muscle endurance) 20/BPM	Abdominal muscular endurance	Beep test (20/BPM)
8	Push ups	Strength endurance	Beep test (20/BPM)

Table 3.Comparison of motor variable performance for plyometric training with Yoga group between pre and posttest:

	pretest		posttest			
S.No	**Variables**	**Mean**	**SD**	**Mean**	**SD**	**t**	**p**
1	Standing Long Jump (cm)	111.70	13.10	119.72	12.46	6.76	0.012
2	Trunk Lift (cm)	31.83	3.22	35.95	4.53	4.67	0.006
3	Sit and reach (cm)	11.75	3.29	17.89	3.68	9.65	0.000
4	Balance (Sec)	16.93	3.69	20.68	3.65	5.54	0.000
5	Run 20m (sec)	4.86	0.70	4.37	0.41	3.91	0.002
6	Chin up (arm & shoulder)	6.32	5.00	7.98	5.10	5.45	0.000
7	Curl up (abdominal muscle endurance) 20/BPM	21.84	7.30	25.44	7.44	3.32	0.004
8	Push ups	9.33	5.21	10.78	5.32	3.46	0.005

Table 4.Comparison of motor variable performance for CONTROL GROUP between pre and posttest:

	pretest		posttest			
S.No	**Variables**	**Mean**	**SD**	**Mean**	**SD**	**t**	**p**
1	Standing Long Jump (cm)	111.43	13.40	111.37	12.12	0.305	0.763
2	Trunk Lift (cm)	31.46	3.43	30.59	3.30	1.456	0.365
3	Sit and reach (cm)	11.30	2.23	11.98	2.02	0.201	0.615
4	Balance (Sec)	17.13	3.45	17.42	3.43	0.051	0.938
5	Run 20m (sec)	4.82	0.69	4.94	0.79	0.325	0.741
6	Chin up (arm & shoulder)	7.48	4.87	8.01	2.42	0.060	0.079
7	Curl up (abdominal muscle endurance) 20/BPM	21.37	7.54	22.23	7.43	0.624	0.092
8	Push ups	3.77	3.77	9.77	3.60	1.477	0.105

Statistical analysis

Descriptive statistics (means and Standard deviation) was calculated for all variables separately for each group. The independent variables in the study were the type of groups. Paired t test (pre versus post) was performed to determine whether there were significant differences. There were no significant pretest differences between control and gymnastics group. Significant level was defined as ($p<0.05$).

Results

The means and standard deviations for each parameter are presented in table 1. In the comparison of the motor tests for pre and post test scores in gymnastics group the following are obtained: for standing long jump, $t=6.76$ ($p< 0.01$); trunk lift, t.4.67 ($p<0.01$); sit and reach, $t=9.65$ ($p<0.01$); balance, ($t=5.54, p<0.01$); run 20m, ($t=3.91$, $p<0.01$); chin up, $t=5.45$ ($p<0.01$); curl up, $t=3.32$ ($p<0.01$); push up, $t=3.46$ ($p<0.01$).

The means and standard deviations for each parameter are presented in table 2. In the comparison of the motor tests for pre and post test scores in control group the following are obtained: for standing long jump, $t=0.305$ ($p> 0.05$); trunk lift, t.1.456 ($p>0.01$); sit and reach, $t=0.201$ ($p>0.05$); balance, ($t=0.051, p>0.05$); run 20m, ($t=0.325$, $p>0.05$); chin up, $t=0.60$ ($p>0.05$); curl up, $t=0.624$ ($p>0.05$); push up, $t=1.477$ ($p>0.05$).

Discussion

Strength, balance, coordination, speed, agility and flexibility are often described as performance related fitness, reflecting the performance aspect physical fitness (Haga, 2008). Under the influence of physical exercise during growth and development, positive changes are expected especially in the area of motor abilities. Motor competence has important implications for different aspects of development in children and adolescence (Piek et al., 2006). In this study, pretest and posttest measurement of all motor test batteries in the experimental group show meaningful differences ($p<0.05$), which means that the 12 weeks training programme for adolescents proved beneficial. On the other hand, it is significant that no statistically meaningful progress was seen in the control group ($p>0.05$). Gymnastics offers a great range of locomotive, stability and body control movements which are highly important for the development of children. Gymnastics requires a great diversity of movement; transitions; from dynamic to static elements and vise versa, frequent changes of the body position in space (Werner et al., 2012; Pajek et al., 2010).

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