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EFFECT OF BENCH STEP TRAINING ON KICKING AMONG FOOTBALL STUDENTS

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Abstract:

The purpose of the study was to investigate the effect of bench step training on kicking ability among football students. For the present study the 30 male football students from Mannaniya College of Arts and Science, Thiruvananthapuram, Kerala were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each. Group 'A' underwent bench step training only, group 'B' have not underwent any training. The data was collected before and after twelve weeks of training. The data was analyzed by applying paired 't' test. The level of significance was set at 0.05. It was observed that the bench step training has significantly improved the kicking ability of football students.

Key Words: Bench Step Training, Kicking, Football Students.

Introduction:

Training improves the functioning of the circulatory, the respiratory and the muscle systems while practice is largely aimed at improving the control of muscle activity by the nervous system. Different training methods have been commonly used to improve physical fitness and its related standards of performance of the players. Training increases the overall efficiency of the heart contraction becomes more forceful, the diastolic phase increase and the reservoir capacities are enlarged. This procedure requires the subject to lift his weight a known height (Height of bench) predetermined rate set by a metronome use of this procedure requires no expensive equipment, very little skill and is adaptable for large groups. In the stepping up exercise, each subject will be asked to stand near the twenty two inch high bench. On the command "ready start the subject began stepping for a period of three minutes. The first method of bench step exercise the subject was performed the bench step exercise for three minutes with thirty cadence per minute. By this method the experimental group I could be followed. The second method of bend step exercise the subject was performed the bench step exercise for three minutes with forty cadence per minute. By the methods the experimental group II could be followed (Bennet, 1995).

Reviews:

Scharff et al. (1996) recent investigation of acute cardiorespiratory responses to the current 'popularised' style of bench/step exercise has validated its use in improving aerobic physical fitness, particularly in women. However, no marked differences in relative measures of cardiorespiratory demand have been reported between men and women. Instructor data and training investigations further substantiate the effectiveness of bench/step exercise in promoting physical fitness, including upper body strength. However, the energy cost of bench/step exercise can vary dramatically. Important factors include, the selected step height, exercise rate, imposed step manoeuvre, routine format and use of hand-held weights. Hand-held weights may be more useful for men than woman. During training, bench/step exercise has been reported to yield a high incidence of grade I injury complaints, particularly in the calf and shoulder region. However, nearly 90% of these complaints were attributable to acute muscle soreness. Few serious injuries have been associated with the activity. Biomechanical research has shown that the ground reaction forces (GRF) experienced during bench stepping are lower than running and directly related to the step height and type of manoeuvre. In addition, compared with novices, instructors exhibit a moderation in the GRF pattern generated during landing. This suggests that a learning effect has occurred and that teachers yield a more consistent landing pattern. Finally, the activity may be effective in improving body composition, but a consideration of factors related to energy expenditure (e.g. exercise duration and dietary control) appear to be important in regimens prescribed for modifying body fat.

Wilison et al. (2013) effect of bench/step group exercise with and without extremity loading on muscular fitness, body composition, and psychological affect. A prospective training study. General community fitness center. 44 healthy adult females (age: 21-51 yrs). 12 weeks of bench/ step exercise (3 sessions/week, 50 min/session, 60-90% HRmax). Subjects were randomly assigned to groups that trained with (WT, n=16) and without (NWT, n=16) 0.68 kg/ankle and 1.36 kg/hand weights while 12 subjects served as non-training controls (NTC). Pre- and postintervention muscular strength and endurance for knee and elbow flexion and extension, and for shoulder abduction and adduction were examined by isokinetic dynamometry. Body composition was assessed with hydrostatic weighing and psychological affect by questionnaire. Thirty-two subjects completed the study. ANOVA revealed that pre- to postintervention changes for body fat (2.6%), fat-free weight (+0.7 kg), fat weight (-1.9 kg), and knee flexion peak torque were significantly different in the bench/step exercise trained

(WT+NWT) compared to the NTC study group. Specific comparisons of muscle strength and endurance change scores of WT+NWT relative to NTC, and of WT relative to NWT revealed no other significant differences between groups. Positive and negative affective states were similar among study groups before and after the intervention. Participation in bench/step group exercise improved body composition but was of limited or no value as a modality to change muscular fitness and psychological affect in healthy adult females. The use of ankle and hand weights failed to enhance training adaptations.

Engels et al. (2002) examined the effects of a twelve-week home-based bench step exercise program on aerobic capacity, lower extremity power and static balance in elderly subjects. <Methods> Thirty-eight elderly men and women participated in this study (age: 75±4 years, mean±SD). The subjects were randomly assigned, according to the area in which they resided, into either the exercise group (EG: 11 men, 8 women) or the control group (CG: 14 men, 5 women). The EG performed a 12-week home-based bench step exercise program (7 sessions/week, 20-30 minutes/session, bench height 15.0-20cm). They recorded the length of exercise and their physical condition. Before and after the intervention a sub-maximum bench step test, a leg extension power test and a one-leg balance test with eyes open (balance test) were performed to assess the subjects' aerobic capacity, as determined by the lactate threshold (LT), as well as lower extremity power and static balance ability. <Results> The LT (3.9(3.2, 4.9) vs. 5.4(4.8,5.6) METs; $p<0.01$) and leg extension power (7.1(6.2, 9.9) vs. 10.3(7.2, 13.7)watts/kg ; $p<0.05$) significantly increased while the balance test (9(4, 25) vs. 16(6, 35)) sec; $p<0.1$) also tended to increase in the EG. Conversely, these parameters did not significantly change in the CG (4.5(3.9, 5.1) vs. 4.9(4.3, 5.5) METs; 7.4(6.7, 12.5) vs. 8.1(7.3, 12.5) watts/kg, 17(8, 50) vs. 11(6, 20) sec, neither N.S.) Based on the diary data, the subjects in the EG exercised an average of 164±56 minutes/week for twelve weeks. <Conclusion> This study showed that a bench step exercise program effectively improved not only aerobic capacity but also lower extremity power and static balance ability in elderly subjects.

Kraemer et al. (2001) investigated the comprehensive physiological alterations that take place during the combination of bench-step aerobics (BSA) and resistance exercise training. Thirty-five healthy, active women were randomly assigned to one of four groups that either a) performed 25 min of BSA only (SA25); b) performed a combination of 25 min of BSA and a multiple-set upper and lower body resistance exercise program (SAR); c) performed 40 min of BSA only (SA40); or d) served as a control group (C), only performing activities of daily living. Direct assessments for body composition, aerobic fitness, muscular strength, endurance, power, and cross-sectional area were performed 1 wk before and after 12 wk of training. All training groups significantly improved peak VO(2) (3.7 to 5.3 mL O(2).kg(-1).min(-1)), with the greatest improvement observed in the SAR group ($P = 0.05$). Significant reductions in preexercise heart rates (8-9 bpm) and body fat percent (5--6%) were observed in all training groups after training. Significant reductions in resting diastolic blood pressure were observed for the SAR and SA40 groups (6.7 and 5.8 mm Hg, respectively). Muscular strength and endurance only improved significantly in the SAR group (21 and 11% respectively). All groups demonstrated increased lower body power (11--14%), but only the SAR group significantly improved upper body power (32%). Thigh muscle cross-sectional areas measured via magnetic resonance imaging (MRI) increased primarily for the SAR group. BSA is an exercise modality effective for improving physical fitness and body composition in healthy women. The addition of resistance exercise appears to enhance the total fitness profile by improving muscular performances, muscle morphology, and cardiovascular fitness greater than from performing BSA alone. Therefore, the inclusion of both modalities to an exercise program is most effective for improving total body fitness and a woman's health profile.

Narender et al. (2015) bench Step Training is usually associated with Cardio and develops high level of physical fitness. The aim of the study was to find the effect of varied intensities of bench step training on physiological variables like heart rate, cardio respiratory endurance and respiratory rate of the sportsperson of Kurukshetra University. Method: Ninety sportspersons of Kurukshetra University from discipline acted as subjects whose age ranged between 18 -24 years and divided into three equal groups. Group I was low intensity training group (LITG), Group II was high intensity training group (HITG) and the third was control group (CG). Bench step training was administered thrice per week, one hour per day for 12 weeks separately for respective training groups. The physiological variables tested were resting pulse rate (RPR), cardiorespiratory endurance (CRE) and respiratory rate (RR). The statistical tool used was Analysis of Variance (ANCOVA) to find out the significant difference between the LITG and HITG. Result: The results showed that the F ratio for RPR between the LITG and HITG from pre to post-test was, 9.56 and 26.62, for CRE the F ratio was 0.05 and 2.36 and for RPR the F ratio was 0.03 and 15.05 respectively. There was no change in the performance of the CG. Conclusion: It was concluded that RPR, CRE and RR improved due to bench step training in both the experimental groups. Moreover, HITG resulted greater improvements than LITG and there was no change in the performance of CG. Further it is concluded that Bench Step Training is an exercise modality effective for enhancing total fitness profile by improving muscular performances, muscle morphology, and cardiovascular fitness.

Methodology:

The purpose of the study was to investigate the effect of bench step training on kicking ability among football students. For the present study the 30 male football students from Mannaniya College of Arts and Science, Thiruvananthapuram, Kerala were selected at random and their age ranged from 18 to 25 years. For the present study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each. Group 'A' underwent bench step training only, group 'B' have not underwent any training. The data was collected before and after twelve weeks of training. The data was analyzed by applying paired 't' test. The level of significance was set at 0.05.

Results:

Table 1: Computation of 't' Ratio Between the Pre Test and Post Test Means of Kicking With Right Foot of Experiment Group and Control Group

S.No	Variables	Mean diff	SD	σ DM	't' ratio
1	Kicking with Right Foot	Exp:2.93	Exp:0.88	Exp:0.23	12.86*
		Con:0.20	Con:0.41	Con:0.11	1.87

*Significant at 0.05 level

An examination of table 2 indicates that the obtained 't' ratios for kicking with right foot of experimental group was 12.86. The obtained 't' ratio on kick right foot were found to be greater than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be significant. The obtained 't' ratios for kicking with right foot of control group was 1.87. The obtained 't' ratio on kick right foot were found to be lesser than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be not significant. The mean scores of kicking with right foot of experimental group and control group were shown graphically in figure 1.

Figure 1: Bar Diagram Showing the Pre Mean and Post Mean of Kicking With Right Foot of Experimental Group and Control Group

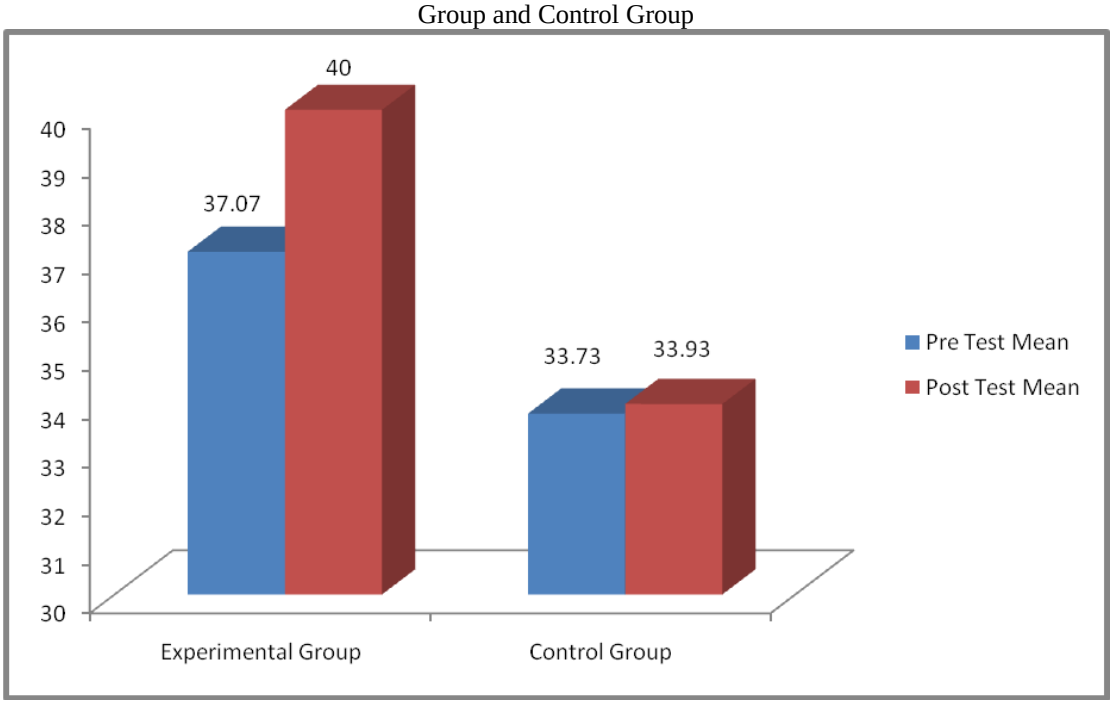


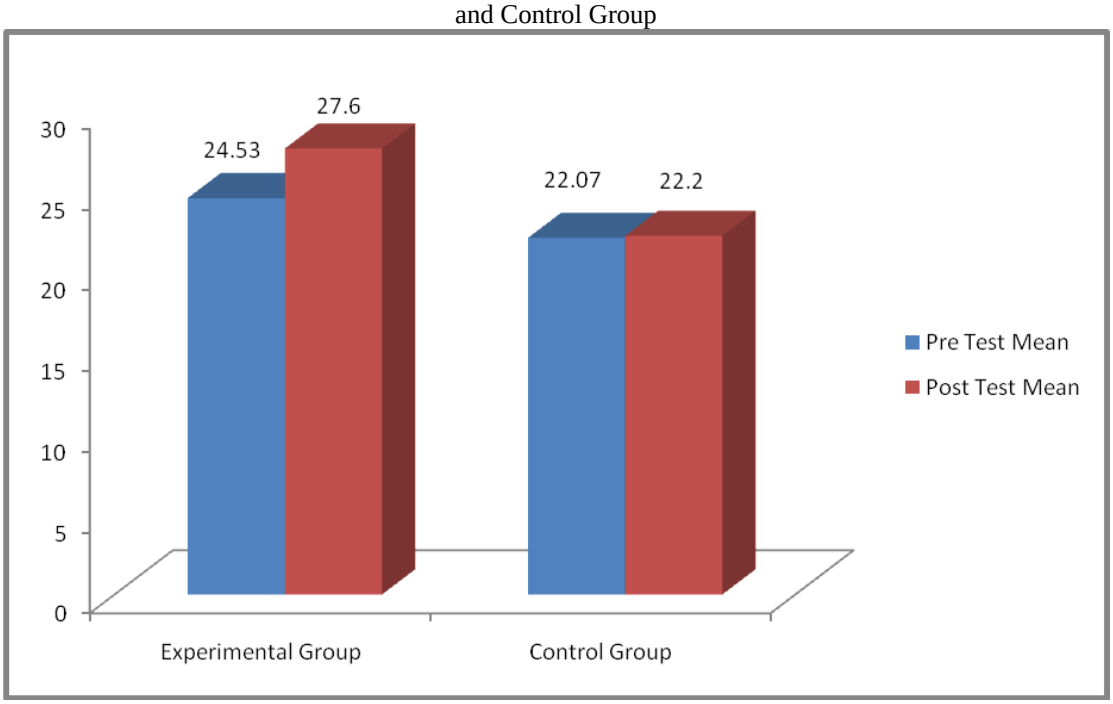
Table 2: Computation of 't' Ratio Between t Pre Test and Post Test Means of Kicking With Left Foot of Experiment Group and Control Group

S.No	Variables	Mean diff	SD	σ DM	't' ratio
2	Kicking with Left Foot	Exp:3.07	Exp:2.28	Exp:0.59	5.20*
		Con:0.13	Con:0.52	Con:0.13	1.00

*Significant at 0.05 level

An examination of table II indicates that the obtained 't' ratios for kicking with left foot of experimental group was 5.20. The obtained 't' ratio on kicking with left foot were found to be greater than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be significant. The obtained 't' ratios for kicking with left foot of control group was 1.00. The obtained 't' ratio on kicking with left foot were found to be lesser than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be not significant. The mean scores of kicking with left foot of experimental group and control group were shown graphically in figure 2.

Figure 2: Bar Diagram Showing the Pre Mean and Post Mean of Kicking With Left Foot of Experimental Group and Control Group



Conclusion:

It was observed that the bench step training has significantly improved the kicking ability of football students.

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