



EFFECT OF PSYCHO PHYSICAL TRAINING ON SELECTED PSYCHOMOTOR ABILITIES OF BALANCE AMONG MALE HANDBALL PLAYERS

Manivannan. T.A¹, Dr. S.T.N. Rajeswaran²

¹Ph.D., Research Scholar, Department of Physical Education, Bharathiar University

²Professor, Department of Physical Education, Bharathiar University

ABSTRACT

A modern trend that allows selection system optimization is the introduction of tests that assess the development of coordination skills. In handball, the player has to run, jump, and throw the ball while shooting and passing the ball, both stationary and moving. Psycho-physical training, in general terms, can be described as the continuous relationship between mental processes and human physical movements. The development of psychomotor behaviors in players combined with good physical training can lead to optimal manifestations of the players' skills during matches. Thus, the present study was framed to study the effect of psycho-physical training on selected psychomotor abilities of static balance and dynamic balance among handball players at the school level. Samples: As samples (N = 96), students studying in schools who were participants in inter-school competitions were selected. The age group was fixed in the range of 13 to 17. Experimental design: A pre-post random group design was used as an experimental design in this study. By assessing the performance of overall playing ability samples (N = 96), samples in the range of 4 to 5 on the performance of overall playing abilities were further screened. Thus, a total of 54 samples were identified. Among them (N = 54), 40 samples were randomly selected and segmented into two groups equally. Thus, each group consists of 20 subjects. Group 1 acted as psycho-physical training (PPT), and Group 2 was considered the control group (CG). The collected data from the pre-test and post-test were tested with a paired t-test and analysis of covariance to test the individualized and comparative effects of psycho-physical training and the control group alone on selected psychomotor abilities of static balance and dynamic balance. To test the significance of the results derived, the 0.05 level was chosen as the level of significance. The results of the study confirmed the positive effect of psycho-physical training on the psychomotor abilities of static balance and dynamic balance.

KEYWORDS: Handball, Psycho Physical Training, Psychomotor, Nishpanda Bhava, Static Balance, Dynamic Balance

INTRODUCTION

Handball is an Olympic discipline game where successful performance depends on several basic abilities in particular strength, power, speed, and endurance. Creativity in combination with speed and strength as well as coordination makes this sport very attractive but tough to play (Sporis et al., 2010). Psycho-physical training has significantly influenced handball by integrating mental and physical techniques. This approach combines cognitive strategies with physical conditioning, optimizing player performance (Granero-Gallegos et al., 2020). Visualization exercises refine decision-making, enabling athletes to react swiftly on the court (Olmedilla et al., 2020). Sensory drills enhance proprioception and spatial awareness, bolstering coordination and agility (Hartmann et al., 2010). Breathing techniques foster composure during high-pressure situations (Schunemann et al., 2016). Enhanced focus sharpens anticipation, elevating reaction times and precision (Zhang et al., 2019). Ultimately, psycho-physical training empowers handball players with a comprehensive skill set, enhancing teamwork and individual performance (Beckmann & Elbe, 2015). Nishpanda Bhava a concept from yoga philosophy, emphasizes unwavering focus. Incorporating it into psycho-physical training enhances psychomotor abilities by promoting concentration and reducing distractions. (Rani, 2015). Balance is generally defined as the ability to maintain the body's center of gravity within its base of support and can be categorized as either static or dynamic balance. Static balance involves sustaining the body in static equilibrium or within its base of support, while dynamic balance is considered more challenging due to the need to maintain equilibrium during a transition from a dynamic to a static state. Both static and dynamic balance necessitates the integration of visual, vestibular, and proprioceptive inputs to produce an efferent response, controlling the body within its base of support. Handball, as a sport with complex movements, requires players to engage in running, jumping, and throwing throughout the game. Successful execution of passes, throws, and shots require a harmonious coordination of body and mind, drawing upon both physical and motor talents. In the realm of psychomotor skills, which involve the ongoing relationship between mental processes and physical movements, the development of specific abilities such as static and dynamic balance is crucial. While the field of psychomotor skills is continually evolving, there remains ample room for improvement. Psychomotor skills can be defined as the intertwined connection between mental



processes and human physical movements, with a dependency on the development of specific abilities. In the current system of training, physical training stands out as the primary method for developing physical abilities. However, psychomotor training, equally essential for skill execution, is often overlooked. This gap in the current handball training method underscores the importance of addressing both physical and psychomotor aspects to achieve optimal performance.

METHODOLOGY

To achieve the objectives formulated in the present study, the means and methods used are as follows: In the present study, the investigator aimed to study the effects of psycho-physical training and a control group on balance abilities. A pre-post random group experiment research design was employed. In the selection of samples, the convenience sampling method is used. The students participating in the inter-school competitions were selected randomly (N = 96). The age of the samples was fixed in the range of 13 to 17. Since the present study aims to validate the efficiency of psycho-physical training on variables of the ability of balance to establish homogeneity among the samples selected for experimental groups, based performance on overall playing ability was initially measured using the expert rating method. From the selection of samples (N =96), samples in the range of 4 to 5 on the performance of overall playing abilities were further screened. Thus, a total of 54 samples were identified. Among them (N = 54), 40 samples were randomly selected and segmented into two groups equally. Thus, each group consists of 20 subjects. Group 1 was named Psycho-Physical Training (PPT), and Group 2 was named Control Group (CG). As variables, the performance of subjects on the abilities of balance, static balance, and dynamic balance were selected. The selected variables were measured with the help of research scholars in physical education using standardized tests. The stork balance test (in seconds) is used to measure static balance, and the modified bass balance test (in scores) is used to measure dynamic balance. This was considered a pre-test score.

Following this, samples of group I were treated with psycho-physical training, and samples of group 2 were treated with traditional training alone. Subjects in the control group were allowed to practice their traditional training schedule without any specific training related to psycho-physical training. Subjects of the psycho-physical training group were treated with their respective programs for about twelve weeks over five days a week. For employing psycho-physical training, drills related to coordinative abilities and basic fundamental skills were used with a duration of 60–70 minutes. After the completion of the treatment period, the samples from both groups were tested on variables such as the pre-test and considered as post-test scores. The collected data were tested with a paired t-test, an analysis of variance, and an analysis of covariance to test the individualized and comparative effects of psycho-physical training and the control group alone on selected abilities of static balance and dynamic balance. To test the significance of the results derived, the 0.05 level was chosen as the level of significance. The results of the study are as follows.

Table – 1: Showing the psycho-physical training or 12 weeks.

S. No	Name of the Drills	Repetition	Duration	Set	Rest between Set
1	Zig - Zag Run	2	50 sec	3	60 sec
2	Backward Run	2	50 sec	3	60 sec
3	Standing Dribble	2	50 sec	3	60 sec
4	Single Leg Hopping	2	50 sec	3	60 sec
5	Chest Pass	2	50 sec	3	60 sec
6	Wall Pass	2	50 sec	3	60 sec
7	Partner Jump and Stance	2	50 sec	3	60 sec
8	9 mts Target shoot	2	50 sec	3	60 sec
9	Hurdle Jump and Shoot	2	50 sec	3	60 sec
10	Lead up Game		5 Mins		
11	Nishpanda Bhava		15 Mins		

RESULTS

Table 2: Significance of mean gains & losses between pre and post-test scores of psycho-physical training group on selected psychomotor abilities of balance among male handball players

Variables	Pre-test (Mean)	Post-test (Mean)	MD	SEM	't'-ratio	sig
Static Balance	17.70	20.35	2.65	0.98	2.71*	0.01
Dynamic Balance	33.25	35.30	2.05	.064	3.21*	0.00

* Significant at 0.05 level



Table - 2 explains the results of psycho-physical training, with t-values of 2.71 (static balance) and 3.21 (dynamic balance). When the "t" values for chosen, psycho-physical training were compared to the crucial value of 2.09 for degrees of freedom 1, and 19. The observed 't' values found to be statistically significant at 0.05 levels. From the results, it was inferred that 12 weeks of psycho-physical training has significant impact over the changes on the abilities of static balance and dynamic balance among the male handball players.

Table 3: Significance of mean gains & losses between pre and post-test scores of control group on selected psychomotor abilities of balance among male handball players

Variables	Pre-test (Mean)	Post-test (Mean)	MD	SEM	't'-ratio	sig
Static Balance	17.90	17.40	0.50	0.24	2.13*	0.05
Dynamic Balance	33.05	32.35	0.70	0.68	1.02	0.32

* Significant at 0.05 level

Table - 3 explains the results of control group, with t-values of 2.13 (static balance) When the "t" values for chosen, control group were compared to the crucial value of 2.09 for degrees of freedom 1, and 19. The observed 't' values found to be statistically significant at 0.05 levels. The obtained 't' value of 1.02 (dynamic balance) were compared to the crucial value of 2.09 for degrees of freedom 1, and 19 was observed statistically not significant. From the results, it was inferred that traditional training has significant impact over the changes on the abilities of static balance among the male handball players.

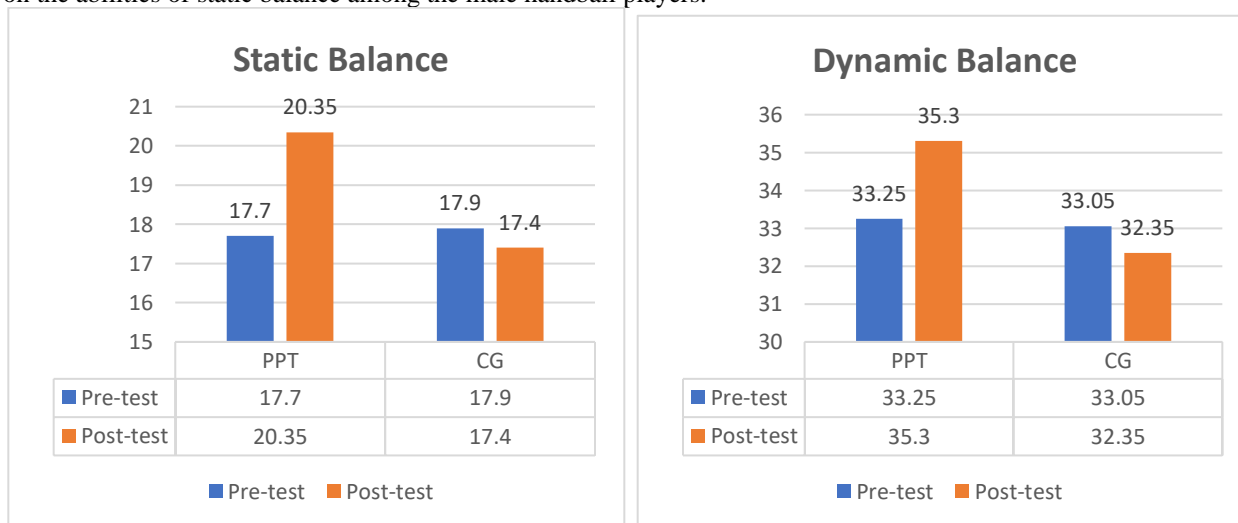


Table 4: Analysis of variance on initial and final means of selected psychomotor abilities of male handball players

Variables		Sources	SS	DF	MS	F - ratio
Static Balance	Pre - test	Between Sets	0.40	1	0.40	0.05
		Within Sets	284.00	38	7.47	
	Post - test	Between Sets	87.02	1	87.02	15.08*
		Within Sets	219.35	38	5.77	
Dynamic Balance	Pre - test	Between Sets	0.40	1	0.40	0.02
		Within Sets	742.70	38	19.54	
	Post - test	Between Sets	87.02	1	87.02	5.03*
		Within Sets	656.75	38	17.28	

* Significant at 0.05 level

Table- 4 explains that the observed F-values are: 0.05 (static balance) and 0.02 (dynamic balance) for pre - test. In testing the significance of mean difference between the psycho-physical training (PPT) and control group (CG) was found to be statistically not significant, it is failed to reach the required value of 4.09 for df is 1, 38. The observed F-value for the post - test means on selected psychomotor abilities of balance is 15.08 (static balance) and 5.03 (dynamic balance). Since the observed F-value on these variables is greater than



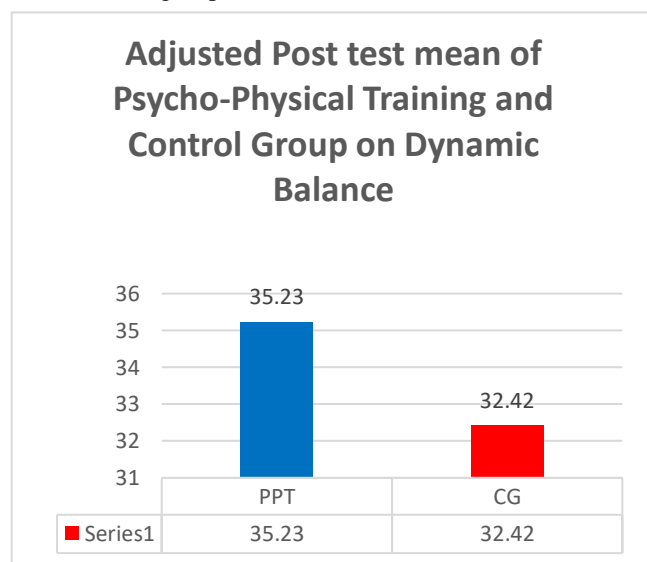
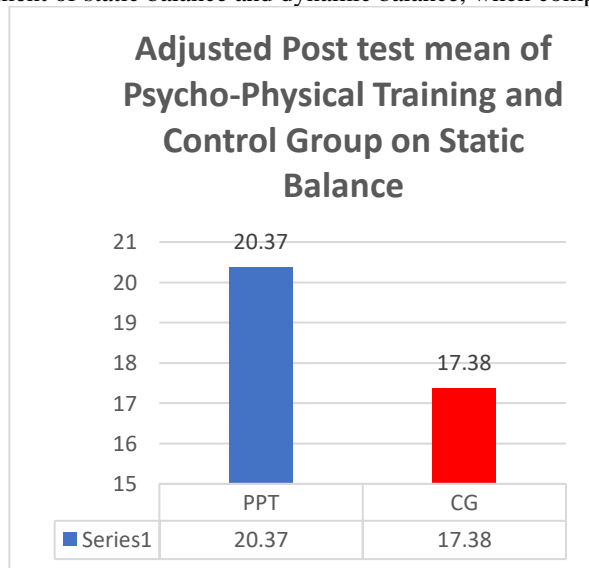
the critical value of 4.09 for df is 1, 38, It is concluded that the observed final mean differences between the psycho-physical training group (PPT) and the control group (CG) group on the variables used in this study after 12 weeks of training were statistically significant. Thus, the results obtained confirm that the psycho-physical training (PPT) have more impact on the development of static balance and dynamic balance, when compared to control group (CG).

Table 5: Analysis of covariance on adjusted post- test means on selected psychomotor abilities of handball players

Variables	Sources	SS	DF	MS	F- ratio
Static Balance	Between Sets	89.41	1	83.41	16.00*
	Within Sets	206.72	37	5.59	
Dynamic Balance	Between Sets	78.72	1	78.72	10.63*
	Within Sets	274.03	37	7.41	

* Significant at 0.05 level

Table 5 reveals that the obtained “f” value was 16.00 (static balance) and 10.63 (dynamic balance). Since the observed F-values on these variables were higher than the required critical value (4.09) at the 0.05 level of significance for df is 1, 37, it was found that the adjusted post-test means differences among the two groups on selected psychomotor abilities of balance (static balance and dynamic balance) were found to be statistically significant. It was concluded that the psycho-physical training (PPT) has more impact on the development of static balance and dynamic balance, when compared to control group (CG).



DISCUSSION ON FINDINGS

Based on the results, the following conclusion has been made. In testing the individualized effect of psycho-physical training on ability of balance (static and dynamic), the observed result confirms the changes made from pre - test and post - treatment on the performance of abilities of balance. Results from the individualized effect of psycho-physical training (PPT) explained that performance on abilities of balance have been improved from the base line. For control group (CG), the obtained results explained that the changes were observed on static balance from their pre to post - test whereas in the remaining variables no significant changes has observed. Based on the results of individualized effect of psycho-physical training (PPT) and control group (CG), it was concluded that, the need of psycho-physical training (PPT) may be the viable source for the players.

The present study experimented the influence of twelve week’s psycho-physical training on the static and dynamic balance of handball players. In present of the study the handball players to avoiding injuries in jumping movements to shooting the ball in front of the opponent player during the situations to help psycho-physical training the successful of the competitions. The results of this study indicated that psycho-physical training is more efficient to bring out desirable changes over the variables of handball players.



Bretze et al., (2014) establishing basic battery tests for assessing psycho-physical training of physical fitness our results emphasize the importance of systematic physical activity, endurance and strength training supporting muscle force, balance control and whole-body movement coordination, in addition to improving the cardiac stress index level. The strong interrelation among these parameters allows the drawing of a more complete view regarding the health condition of aged individuals.

Lucian (2020) Basic psychomotor behaviors such as static and dynamic balance, eye-hand coordination and general dynamic coordination have their area of influence in sports practice. In the previous subchapters we found and addressed the opinion of the authors on these basic components and we share their opinion on the influences they can have in the game of Handball. The balance, especially the dynamic one, is strongly capitalized by the totality of the movements executed with high speed at the same time as the maintenance of an optimal support base to ensure their efficiency. Another element of the balance present in this team sport is represented by the flight balance that the players display when executing the jump shots.

The result from this study is very encouraging and it demonstrates the benefits of psycho-physical training. Besides, the results support that improvement in mobility can occur 12 weeks of psycho-physical training.

CONCLUSION

Illustration upon the study's findings and considering its essential limitations, it becomes evident that the integration of psycho-physical training has a noticeable positive influence on improving psychomotor variables among male handball players. Furthermore, significant progress was observed within the selected variables of the psycho-physical training group, evident after twelve weeks of specialized training. This solidifies the notion that this training regimen is effective in enhancing both static balance and dynamic balance. It can be inferred that the personalized implementation of psycho-physical training demonstrated statistically significant and positive effects throughout the intervention period, contributing to the improvement of psychomotor variables among male handball players.

1. It can be conditional that the improved application of psycho-physical training demonstrated statistically significant and positive effects throughout the intervention period, contributing to the improvement of selected psychomotor abilities of static balance and dynamic balance among male handball players.
2. The individualized interventions applied by the control group, psychomotor abilities (static balance) among the players belonging to the control group (CG), and significant changes were observed.
3. Upon comparison, the comparative outcomes lead to the conclusion that the psycho-physical training group exhibited significantly more pronounced advancements in psychomotor abilities when contrasted with the performance of the psycho-physical training and control groups. This discrepancy underscores the superior impact of specialized training in static balance and dynamic balance on male handball players.

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