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A comparative study of psychomotor abilities sub-junior, junior and senior levels of women boxers

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Abstract

The main purpose of the study was to compare psychomotor abilities among sub-junior, junior and senior level of women boxers. For the purpose of study, Overall 90 boxers, 30 boxers each from sub-junior & junior and senior level boxers of North-East State of Sports Authority of India (SAI) centre those who participated up to National Level. The data was collected through administration of the Nelson Hand and Foot Reaction Time Test developed by Edwin Nelson (1965) to measure the reaction ability. **Statistical Analysis:** To find out the significant difference in reaction abilities among the women boxers. The one way ANOVA test was used and level of significant was fixed at 0.05.

Result: The result of the study reveals that there is a significant difference among different levels of women boxers.

Conclusion: Result of the study indicate a low level of psychomotor abilities among sub-junior boxers with a mean value of hand 9.41 hand in reaction time and 8.83 in foot reaction time followed by a mean value of reaction time of 4.68 of hand and 4.76 of foot reaction time among junior level of boxers and with mean value of hand reaction time of 3.72 and foot reaction time of 3.7 among senior boxers.

Keywords: Psychomotor, reaction ability, performance, competition and boxers

1. Introduction

Boxing generally is called a man's event, however the event has gained tremendous popularity among women group and is being played in every corner of the world irrespective of caste, age, and religion and socio economic background. The women's participation in boxing dates back to the time when the first women boxing club was introduced in London in 1920 by Professor Andrew Newton. It took long 92 years to become the Olympic sports after the formation of the club by Professor Newton in 2012 London Olympics.

To perform high level of proficiency in boxing skills, a high degree of general motor abilities inter-correlated with co-ordination, speed of the movement and quick reaction are required. The motor skills and abilities include hand eye co-ordination, reaction time, arm hand, steadiness, manual dexterity etc. Basic co-ordinative abilities are developed gradually with increase in age, physical abilities and level of competition. For high level of skill performance, development of motor abilities to optimum level of human capacity is necessary. Development of psychomotor abilities requires the development of the both physical as well as the cognitive abilities of the human body.

In boxing, the boxer has to react to the punches in a fraction of second requiring high level coordinated movement of limbs of the body to be able to save oneself and score against an opponent. Some of example of psychomotor abilities in boxing are explained as here under:

1. **Arm – Hand Steadiness:** The ability to keep the hand and arm steady while moving the body e.g., Guard position with foot work in boxing.
2. **Control Precision:** The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions e.g., Control of one's own body weight while punching.
3. **Multilimb Coordination:** The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) e.g., Combination punches in boxing.
4. **Reaction Time:** The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears i.e., React and manoeuvring of the opponent's punch.
5. **Speed of Limb movement:** The ability to quickly move the arms and the legs i.e., punch with coordination of arm and foot.

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2. Methodology

2.1 Selection of subject

The study was conducted on sub – junior, junior and senior women boxers who participated up to national level. Overall 90 boxers, 30 boxers each from sub – junior, junior and senior level of boxer were selected for the study.

2.2 Selection of Test Item

The data was collected through the administration of the Nelson Hand Reaction Time Test and Nelson Foot Reaction Time Test (1965)

2.3 Procedure

Before taking the test, the examiner clearly demonstrated the test till the subjects understood the test in detail.

2.4 Statistical Technique

To compare psychomotor abilities, the analysis of variance was applied at .05 level of significance.

2.5 Results of the Study: The scores were measured by using one way ANOVA.

2.6 Findings

Table 1: Analysis of variance of Nelson Hand Reaction Time Test of the different levels women’s boxers.

Source of variation	SS	df	MS	F
Between Groups	600.82	2	300.41	65.073
Within Groups	401.63	87	4.61	
Total	1002.45	89		

*Significant at 0.05 level
F 0.05 (2, 87) = 3.04

Table-1 reveals that there is significant difference among senior, junior and sub-junior women boxers in relation to speed as the obtained ‘F’ ratio of 65.073 which was higher than the tabulated value of 3.04 required for significance at 0.05 level with (2,27) degree of freedom.

This finding implies that the Nelson hand reaction of different levels of boxers i.e. sub-junior & junior and senior women’s were significantly different. Since f value was significant, the post Hoc mean test was conducted to find out the status and actual difference in the hand reaction abilities of different level of women boxers.

Table 2: Post Hoc mean compression of Nelson Hand Reaction abilities of the different levels of women’s boxers.

Sub-junior	Junior	Senior	Mean Difference	Critical Difference
9.53	4.6		4.93	0.10
	4.6	3.63	0.96	
9.53		3.63	5.9	

*Significant at 0.05

Table 2 revealed that Nelson hand reaction time test of the different level of boxers were significantly different as the mean value were found to be significant with 4.93 when compared with sub-junior and junior, 0.96 between junior and senior and 5.9 between sub-junior and senior respectively which is greater than the value of critical difference i.e. (0.10).

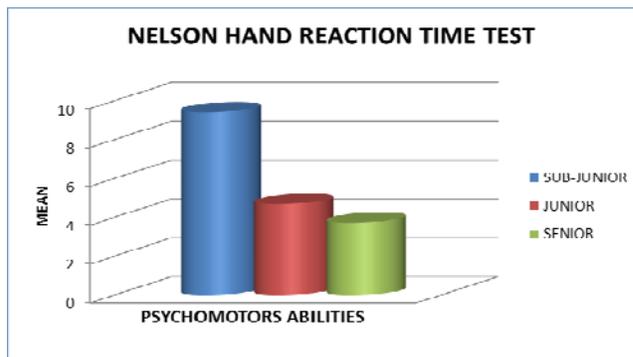


Fig 1: Mean comparison of psychomotor abilities of hand reaction of women boxers.

Table 3: Analysis of variance of Nelson Foot Reaction Time Test of the different levels boxers.

Source of variation	SS	df	MS	F
Between Groups	440.26	2	220.13	52.06
Within Groups	367.83	87	4.22	
Total	808.1	89		

*Significant at 0.05 level
F 0.05 (2, 87) = 3.04

Table-3 reveals that there is significant difference among senior, junior and sub-junior women boxers in relation to speed as obtained ‘F’ ratio 52.06 which is higher than the tabulated value of 3.04 required for significance at 0.05 level with (2,27) degree of freedom.

This finding implies that the Nelson foot reaction of different levels of boxers i.e. sub-juniors & juniors and seniors women’s are significantly different. Since f value was significant, the post Hoc mean test was conducted to find out the status and actual difference in the Hand reaction abilities of different level of women boxers.

Table 4: Post Hoc mean compression of Nelson Foot Reaction abilities of the different levels of women’s boxers.

Sub-junior	Junior	Senior	Mean Difference	Critical Difference
8.83	4.76		4.06	0.099
	4.76	3.7	1.06	
8.83		3.7	5.13	

*Significant at 0.05

Table 4 revealed that Nelson foot reaction time test of the different levels women’s boxers were significantly different as the mean value were found to be significant with 4.06 when compared with sub-junior and junior, 1.06 between junior and senior and 5.13 between sub-junior and senior respectively which is greater than the value of critical difference i.e. (0.099)

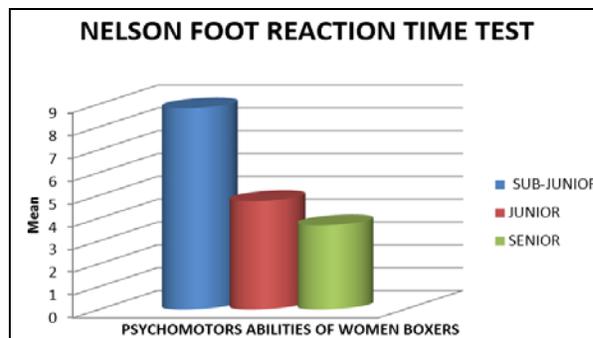


Fig 2: Mean comparison of psychomotor abilities of hand reaction of women boxers.

3. Discussion of Findings

On the basis of finding of the study Hand and Foot Reaction Time of different level of women's boxers, the reaction abilities of the sub junior levels of boxers were found to be significantly low among the three groups with mean values of hand reaction time of 9.41 and foot reaction time of 8.83, followed by junior boxers with mean value of hand reaction time of 4.68 and foot reaction time of 4.76 and senior groups with the mean value of hand reaction time of 3.72 and a foot reaction time of 3.7. The trend was sub- juniors > junior > senior boxers. The reason behind this may be nature of participation only improves as the boxer climbs up the ladder of level of participation level of group. The sub-junior group has less experience compare to junior and senior level of boxers. Regular practice and adaptation of hand, movement and co-ordination help to achieve high performance.

4. Conclusion

In view of the discussion of finding of study it may be concluded that Hand and Foot Reaction Time plays a major role in optimum level of performance in boxing.

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