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Effect of Bout Induced Fatigue and Different Duration of Recovery on Selected Perceptual Abilities and Coordination among Judokas

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Abstract: ***The purpose of the study was to visualise the future scope of sports psychology in India by using Delphi technique. The subjects selected for the study was 60 physical educators and coaches teaching sport psychology in professional institutions of physical education and sports and psychologist involve in the propagation of sport psychology and the opinion of these experts should be subjective to evaluation for assessing of future scope of sports psychology. In construction of questionnaire for Delphi study research scholar followed all the standard method prescribed for questionnaire construction. The maximum probable questionnaire items were prepared for each area to elicit relevant information of crucial importance from which the future scope of sports psychology could be ascertained. As a standard method of questionnaire construction to initial trial run of questionnaire of Delphi was circulated among selected experts. They suggested modification and changes. Based on the consultation with the experts the final form of the first round of the Delphi questionnaire was prepared. The questions of the second round questionnaire of Delphi were constructed on the basis of the responses of the first round questionnaire. The second questionnaire included first rounds with alternations were required and also new questions. Results of the first round were provided along with the questions, were applicable. The first round and second round of the questionnaire was mailed the experts along with a stamped, self-addressed envelope. The Chi-square was used as statistical techniques for the analysis of data. The significance of Chi-square was tested at .05 level of confidence.***

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There are more than 1000 different forms of martial arts scattered around the world. One of them is Judo. Judo – gentle way, Japanese art of self defense and sport with Olympic recognition. Judo fundamental principal's emphasis turning opponent strength and overcoming by skill, rather than sheer strength. When a player competes full five minutes bout with his opponents of equal level, he exhausts fully which causes the fatigue in him. The main cause of fatigue during bout from the anaerobic point of view is usually glycogen depletion and or dehydration.

So, elite Judokas should have high level of physical fitness to delay the fatigue and for fast recovery, because physical fitness improves the efficiency of all the body system especially cardiopulmonary system. The fitter you are, the longer it takes for your glycogen stores to become depleted. The impinging stimuli are called input and are made up of sensation from the senses of sight, hearing, touch, taste and smell from outside and from kinesthetic or proprioceptor senses from within. The total pattern arising from many sensations and resulting in a meaning, which is more than the sum of its parts.

Judo is a intense and physically demanding sport, adding to this the very nature of movements results to intension of skill application and opponent interface is highly explosive, sudden and strength base. In addition to this the completion system in judo is such that the bout in a particular or category ate competed in a single day. All this makes occurrence of intense degree of fatigue part of the judo competition.

Fatigue as a fact is performance interfering factor. It interferes directly with efficiency of movements, reaction times, speed and force applicable. Realizing this scholar was interested to find out or investigate in depth the amount of fatigue occurrence due to bout and how it effect perceptual and co-ordinative abilities. Also how different duration of rest might lesson or reduce the effect of fatigue.

Statement of the problem

The purpose of this study will be to find out bout induced fatigue on the selected perceptual and coordinative ability.

Another purpose of the study was to find out how different duration of rest period effect recovery from induced fatigue in terms of performance of perceptual abilities and co-ordination.

Significance of the study

Fatigue is inherent occurrence during bout. It is a performance hindrance factor affecting various performance determinant abilities.

Findings of this will help significantly to understand fatigue related factors and management of it for better performance. Further it will also help in following ways:

1. It may help the ``coaches in training those variables of psychomotor, which are effected most by fatigue.

2. It may add new knowledge in the field of competitive Judo.

3. The result of the study may formulate on the basis of developing a scientific training.

MATERIALS AND METHODS

Twenty males Judokas of Lakshmibai National Institute of Physical Education, Gwalior Intervarsity team were selected as subjects and their ages ranged between 17 to 23 years and the variables selected for the study are:

Variables	Tests
Weight Perception Ability	Weight Discrimination test
Depth Perception Ability	Electrically operated depth perception test
Two hand s Coordination test	Two hand path ways coordination test

Initial data for each variable were collected under normal condition: the data has been collected 5 times. Fist pretext was taken before bout and after 4 tests were conducted as follows:-

Duration of Recovery	Test
Immediately after bout	1st test
After 10 Minutes of bout	2nd test
After 20 minutes of bout	3rd test
After 30 minutes of bout	4th test

The entire subjects were subjected to five minutes of intense judo bout, after initial pretest. All the bout were strictly monitored to maintain a high tempo so that throughout five minutes there is a continues and rigorous action and physical movement intended with throw application or counter to such intention. At the end of five minutes data pertaining to selected variable was collected through designated test and at intervals mentioned above.

STATISTICAL TOOL

The one way analysis of variance was used to determine the effect of intense bout induced fatigue and different duration of recovery on selected variables and if calculated F value was found to be significant, least significant difference (LSD), post hoc test was applied to assess the difference among means.

RESULTS

Table 1

Analysis Of Variance for Depth Perception among Judokas

Source of variance	Degree of Freedom	Sum of Square	Mean sum of square	f-ratio
Between group	4	2.39	0.59	0.35
Among group	95	161.09	1.69	

*Significant at 0.05 level F 0.05(4, 95) = 1.98

As table 1 shows that the obtained f-ratio (0.35) is very less than required tabulated F-ratio (1.98) to be significant at 0.05 level, which indicate that there were no significant different between the performance recorded at pre bout, immediately after the bout, after 10 minutes of bout, after 20 minutes of bout and after 30 minutes of bout on the depth perception of Judokas.

Table 2

Analysis Of Variance for Weight Perception among Judokas

Source of variation	Degree of freedom	Sum of square	Mean sum of square	F-ratio
Between group	4	4485.8	1121.4	16.18*
Among group	95	6585.2	69.31	

*significant at 0.05 level F 0.05(4, 95) = 1.98

As table 2 reveals that the determined F-ration (16.18) was significant. Implying that bout induced fatigue and different duration of recovery had effected significantly on weight perception ability.

Since the value of f-ratio was significant in case of weight perception performance, further to see in which of the paired mean different is significant, the least significant difference (LSD) applied as a post hoc test. The findings of the same are presented in table 3.

The post hoc analysis of weight perception performance is presented in table 3.

Table 3

Ordered Paired Means and the Test of Significance between the Means (Post Hoc Test) For Weight Perception Ability after Fdifferent Duration of Recovery

Pre Bout	Immediately after bout	10 min	20 min	30 min	Mean difference	Critical difference
5.70	22.75				17.05*	
5.70		16.85			11.15*	
5.70			9.45		3.75*	
5.70				5.71	0.01	
	22.75	16.85			5.9*	1.03
	22.75		9.45		13.3*	
	22.75			5.71	17.04*	
		16.85	9.45		7.4*	
		16.85		5.71	11.14*	
			9.45	5.71	3.74*	

*Significant C.D. 0.05(19) = 1.03

Table 3 of mean value comparison shows the weight perception ability was significantly affected due to bout fatigue. Since, mean value of deviation or error level in depth perception was seen highest immediately after bout. Further it also was seen that after every 10 minutes of rest weight perception ability has recovered significantly. Since, mean value difference between rest periods was greater than critical difference required to be significant. And it was seen that after 30 minutes of rest weight perception level has almost registered to the level of prebout**.**

Table 4

Analysis Of Variance for Two Hand Coordination among Judokas

Source of variation	Degree of freedom	Sum of square	Mean sum of square	F-ratio
Between group	4	110014.5	27503.6	409.83*
Among group	95	6375.7	67.11	

*significant at 0.05 level F 0.05(4,95) = 1.98

As table 4 reveals that the determinate f- ratio (409.83) was found very much significant as compared to that of tabulated ration (1.98) which shows that there was significant effect of bout induced fatigue on different duration of recovery on the twp hand coordination performance of the judokas. Since the value of f-ratio was significant in case of two hand coordination performance in the least significant difference, post hoc test was used to compare the mean difference.

Table 6

Oredred Paired Means and the Test of Significance between the Means (Post Hoc Test) For Two Hand Coordination Ability after Different Duration of Recovery

Pre Bout	Immediately after bout	10 Min.	20 Min.	30 Min.	Mean difference	Critical difference
104.8	180.9				76.1*	
104.8		128.6			23.8*	
108.8			99		5.8*	
104.8				87.7	17.1*	
	180.9	128.6			52.3*	5.45
	180.9		99		81.9*	
	180.9			87.7	93.2*	
		128.6	99		29.6*	
		128.6		87.7	40.9*	
			99	87.7	11.3*	

The post hoc mean value comparison in two hand coordination reveals bout induced fatigue had significantly deteriorated the two hand coordination. Performance as mean value of time taken to complete hand coordination test immediately after bout was highest is 180.9 sec. Further, it was also seen that in every subsequent rest period of 10 minutes, 20 minutes, 30 minutes hand coordination performance has significantly recovered from bout induced fatigue. The recovery rate from effect of fatigue shows following orders 30 min>20min>10 min.

DISCUSSION ON FINDINGS

The finding of the study have thrown light on crucial aspects of bout fatigue, recovery from fatigue and to extent to which fatigue might affect various perceptual parameters. The facts underlying fatigue and as revealed by this very much justifies the important purpose of this study.

The findings had revealed that a typical Judo bout characterized with intense, vigorous and high intensity movement is high enough to cause fatigue to the level that perceptual ability like weight Perception and two hand coordination is significantly affected. The study also revealed a minimum of 10 minutes rest period is enough to affect significant recovery from affect of fatigue in terms of performance in weight perception and two hand coordination. It also reveled longer duration of rest induces higher recovery.

The findings may be attributed to the fact that Judo bouts are characterized with intense, vigorous, sudden explosive and high tempo movement. Hence, it is obvious that it is highly aerobic system dependent activity. As a result a mere 5 minute's bout is also enough to cause considerable level of lactate accumulation in blood.

Lactate accumulation leads to interference with muscular contraction as a result muscular strength, speed of movement and movement controls are greatly affected. It is this reason that movement control and muscular contraction being affected by lactate, ability to judge weight with perceived discrimination is aroused. As a result weight perception ability is affected.

Similarly lactate interference can solely be attributed to fatigue affect on two hand coordination also. Two hand coordination is basically coupling ability. It is determined on the parts of two synchronized movement of hands in combination of direction. Fore arms is extensively used for grappling in judo, this parts play most prominent role in executing judo throwing scale of any kind. Hence lactate accumulation is highest in forearms and this is the oblivious reason that two hand coordination performances were affected.

The findings in terms of recovery showed with minimum of 10 minutes duration, higher the duration better the recovery for both weight perception ability and two hand coordination ability. As the bout stops so the further lactate accumulation, but increased circulation of blood continues to same duration and lactate removal takes place as natural phenomenon through oxidation and circulation. As a result of lactate level decrease muscle regains better contraction ability etc. and longer the duration of recovery more will be the removal of lactate.

Better recovery in two hand coordination, to better than prebout level in some cases can be attributed to learning effect. In each successive test subject might have better adopted the manipulation of two hand coordination instrument. No effect of fatigue was seen in depth perception ability. The ability to perceive, discriminate distance is more based in visual sensation and perception, and bout fatigue mainly effected movement causing parts of the body. Moreover vision is independent of muscular fatigue.

REFERENCES

- Albert V. carron, ''Physical fatigue and motor Learning", **Research Quarterly** 40:9 (December 1969) : 682
- Baldev Singh Brar, "Psychological performance variation resulting from induced physical andmental fatigue in high and low fitness groups" **Unpublished Doctoral Thesis**, Jiwaji University 1984.
- Barg Gunner & Sioberg Hans, "The variation of hand steadiness with physical stress", **Journals of Motor Behavior**_13:2 (June 1981) : 110.
- Gullet Stavanlee "The effect of cycling induced fatigue upon running kinetic and kinematics during triathlons**" Dissertation abstracts International** 40:6 (November 1972) : 2155-A
- Robert Michael Schwartz, "The effect of various degree of muscular work upon Depth Perception" **Completed Research in health Physical Education and Recreation** 12 (1970) : 43.
- Theorder R. Marshal, "The Immediate effect of fatigue on selected measures of kinetics in Junior High school Boys", **Completed Research** (1969) : 139.
- Barrow and Mcgec, " A practical approach to Measurement in Physical Education" P . 567
- Devinder K. Kansal, "Test and Measurement in sports and Physical Education" P .17.
- Dough N. Hasfad Allan Clacy, "Measurement and evaluation in Physical Education and Exercise Science" Page 192