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Estimation of time duration on the Basis of Decrease in Elbow Joint Angle for Successful Application of Choke in Judo

Mr. Sanjeev Kumar [1] **, Dr. Vinita Bajpai Mishra** [2]

1. Scholar, L.N.I.P.E Gwalior, M.P., India ,
2. Associate Professor, L.N.I.P.E Gwalior, M.P., India

Abstract: The purpose of this study was the estimation of time duration for successful application ofchoke in judo on the basis of decreasing the elbow joint angle. The kinetic variable time was chosen asthe independent variable and the angle between elbow joint , biceps pumped, and forearm, as thedependent variable. Total six boys students of B.P.Ed, studying in LNIPE were chosen as the subject.Their age ranged between 18 to 21years. They were briefed about the objectives of the study after gettingthe consent form signed by their parents. The All India national level participation in JUDO was thedeciding criteria for the identification of sports group. To find out the angle and time, the movement werecaptured by the videography and kinovea 2D software was used. The regression analysis was used as astatistical technique and the data was analyzed by using SPSS. The level of significance was set at 0.05.The result of study shows that biceps pumped and forearm has a direct relation to the angle of the elbowjoint which is responsible for decreasing the time of unconscious.

Keywords: estimation, time duration, decrease, elbow joint angle, successful application, choke, judo, kinetic variable, independent variable, dependent variable

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INTRODUCTION

Objectives of this study were to find out the optimum angle for the application of chokeandto estimate time and degree with reference to angle at elbow joint.

The study was delimited to selected Biomechanical variables [kinematic variables (angle ofthe elbow joint, time taken by an attacker for application of choke). The study was further delimited to male judokasof 18-21 years of age. National level Judokas only were selected for the study. It was hypothesized that the angle at the elbow joint and the time factor would significantly affect the performance of the choke.

METHODOLOGY

Six university level judo players were selected for the study. The levels of subjects were decided according to their achievement in competitive judo. Since the subjects have been undergoing training for considerable period, therefore it was considered subjects posses required of technique choke. All the subjects were explained about the objectives of the study. For the study kinematic analysis of choke, the following variable were selected- Kinematic variables first Angle of the elbow joint second Time third Biceps pumpedForearm.After capturing the video,kinovea 2D software was used to find out angle and time. After finding out the proper angle and time of taking choke of each player data was analyzed by using SPSS analysis software. The statistical technique used was Regression analysis. The level of significance was set

at 0.05. The result of the study shows that the biceps pumped and forearm directly affects to the angle of the elbow joint which is responsible for the decrease in the time of unconscious state.

FINDINGS AND DISCUSSION

Table -1 : The Descriptive Statistics of Judokas

	Mean	Std. Deviation	N
Time	5.8000	1.06101	7
Decrease In Angle	14.7143	3.35233	7
Biceps Pumped	33.7629	2.76008	7
Forearm	25.9571	1.66419	7

Table 1 is showing mean of the different variables with their standard deviation around mean. The variables shown in the table are Time, Decrease in angle, Biceps pumped, Forearm, and Biceps.

Table-2: Correlation Table

		TIME	DECREASE IN ANGLE	BICEPS PUMPED	FOREARM
TIME	Pearson correlation	1	.896	.844	.855
	Sig.(2-tailed)		.00	.017	.014
	N	7	7	7	7
DECREASE IN ANGLE					.
	Pearson correlation	.896	1	.979	968
	Sig.(2-tailed)	.006		.000	.000
BICEPES PUMPED	N	7	7	7	7
					.989
FOREARM					.000
	Pearson correlation	.844	.979	1	7
	Sig.(2-tailed)	.017	.000		
	N	7	7	7	1
					7
	Pearson correlation	.855	.968	.989	
	Sig.(2-tailed)	.014	.000	.000	
	N	7	7	7	

Correlation is significant at the 0.01 level (2-taied)

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When the data were analyzed by using Pearson's Product moment correlation technique three independent variables (Decrease in angle, Biceps pumped, Forearm) correlated with the dependent variable (Time) time

taken by the player going to be unconscious. Since correlation statistics does not claim any cause and effect relationship thus multiple regression equations may provide a better idea regarding making use of these independent variables for further studies.

Table-3: Model Summery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square change	F change	df1	df2	Sig. F change
1	.896	.804	.764	.51518	.804	20.448	1	5	.006

a. Predictors: (Constant), DECREASE IN ANGLE

On the basis of the present set of data, a modelhas been prepared. The model explains 80% variability in the dependent variable. According to the model developed on the basis of present data the variables (decrease in angle, biceps pumped, forearm) all together has the power to predict the time of conscious 76.4%.

Table -4: ANOVAfor testing the significance of the model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.427	1	5.427	20.448	.006[b]
	Residual	1.327	5	.265		
	Total	6.754	6			

Although the models developed on the basis of present data are significant because the associated significance value is less than 0.05.

Table -5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.625	.943		1.723	.146
	DECREASE IN ANGLE	.284	.063	.896	4.522	.006

In table 5 unstandardized and standardized coefficients have been presented these coefficients have two major roles. The unstandardized coefficients were used for developing the prediction equation while standardized coefficients represent the individual contribution of the particular variable toward the dependent variable.

In the case of selected variables, the value of the coefficient of correlation at selected moments were found insignificantly, but this trend does not mean that other variables do not affect decreasing in time to be unconscious or tapping on the mat while performing choke. This can be attributed to the fact that the

opponent's height was not equal to the performer.

Every selected variable significantly correlates to time. In terms of decreasing in time every variable has a major or minor role, they correlate either positive or negative like the angle of the elbow joint directly correlates to the performance of choke, As in this study the researcher was only confined to the relationship of selected variable Biceps pumped is negatively correlated as we pumped our biceps and try to perform choke it helps to reduce the time of opponent's falling.

Study shows that the forearm also affects the time taken to sleep or unconscious, big forearm muscle makes low which directly affect the unconsciousness of the opponent. If we have a minor muscle of the biceps and forearm it will also affect to angle which directly affects the result.

As a whole it may be ascertained that the irregular value of the co-efficient of correlation shown by the selected variables does not mean these variables are not contributing to the performance of subjects in the choke, however, the insignificant value of the coefficient of correlation of these variables with the performance may be due to small sample size and non-availability of sophisticated equipment, these difference were attributed to the good upper body to upper body contact, which is considered as an important aspect of choking technique.The result emphasizes that as we decrease the angle of the elbow joint the time of execution is also decreased so it is directly affected. The result suggests that the performer should increase the muscle mass so the optimum angle can be found so it can be easy to perform choke.

CONCLUSIONS

On the ground provided by SPSS outputs the following logical conclusions have been drawn

Choking time = 1.625 + (decrease in angle) ×.284

The following equation tells that overall choking time depends on 1.625 constant second with a decrease the angle of the elbow joint and its multiple with .284 coefficient value.

Suppose a person decrease 10 degree angle in elbow joint so we can calculate by this equation

Choking time = 1.625 + (decrease in angle) ×.284

= 1.625 + 10× .284

= 4.615 seconds

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