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ESTABLISH THE SELECTION MODEL FOR LONG JUMPERS IN SCHOOL LEVELS

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ABSTRACT

The aim of study is to establish the selection model for athletes ages 13-14 in Coimbatore district. Twenty five junior athletes ages 13-14 participated in this research. Application the equation C scale to built up the criteria for selection and the multiple regression equation to predict the performance of athletes. The results showed that there were 25 indicators in five components such as morphology, function, general fitness, athletic fitness, psychology and applied for selection long jumpers ages 13-14. They were body Body height (cm), body weight, chest circumference (cm), leg length (cm), achilles tendon length (cm), thigh circumference (cm), arms length (cm), arch foot (cm), somatotype in morphology; Heart work (points), pulmonary volume (ml) in function; Push-up 10s (pcs), muscular strength and endurance, maximal trunk extension (kg), 30m sprint in general fitness; Standing long jump(slj), long jump(lj) athletic fitness; Temperament test (808 scale) in psychology. It was also built the selection criteria and classification table of 25 indicators. The research was established the multiple linear regression equation to predict the performance of athletes ages 13-14 based on five components: morphology, function, general fitness, athletic fitness and psychology: Y = Y = - 6.214+ 0.117 X1 + 0.479 X2 + 0.046 X3 + 1.514 X4 + 0.221 X5. There were two components such as morphology and psychology that they were an independent factor significantly predicted performance of long jump with 62.5%, other components such as function, general fitness, and athletic fitness have little effect on the performance of long jumpers at the ages 13-14.

KEYWORDS : Morphology, Function, General fitness, Athletic fitness and Psychology.

INTRODUCTION :

Long jump is one most popular field event (athletics) in the world, and nowadays it was developed extensively in all continents. Practicing long jump consists of basic techniques, hitch kick and hanging. The development of talent is a topic which creates big interest in today's athletic federation. The identification and the capacity to promote talent assumes an important and fundamental role in order to achieve significant results in an international event. Regarding talent selection, scientific researches has given only a partial contribute to this complex issue over the year. The concept of talent selection has evolved from the evaluation of youth performance and abilities to a larger and dynamically interpreted evolving process (Abott, 2002). Many children try to reach the excellence in sport. However, talent identification and development programmes have increased popularity in recent decades, there is a lack of consensus in relation to how talent should be defined or identified the model exactly and there is no uniformly to do for all sport or each sport event. The success rates of talent identification and development programmes have rarely been assessed and the validity of the models applied remains highly debated (Roel Vaeyens, 2008).

Currently there is not system of athletes selecting in long jump in this province and the data related to athletes selecting is still lacking. Therefore, to establish the norm of athletes selecting is very important and urgent for the formation the junior team in Coimbatore. There were several study to establish the criteria for selection of long jumpers in coimbatore such as to research on athlete ages 13-14. To investigate on long jumpers ages 13-14 in coimbatore. But all the studies above had not to create the multiple regression equation to predict the performance of athletes and they did not identify the dominant of each factor during built the criteria of selection.

METHODOLOGY:

This study is to establish the selection model for athletes ages 13-14 in Coimbatore district. Twenty five junior athletes ages 13-14 participated in this research. Application the equation C scale to built up the criteria for selection and the multiple regression equation to predict the performance of athletes. The results showed that there were 25 indicators in five components such as morphology, function, general fitness, athletic fitness, psychology and applied for selection long jumpers ages 13-14.

PROCEDURE:

Questionnaires were sent to specializes, coaches, referees so that choosing the available tests for measurement. It is including anthropometric index, functional test, psychological test, general fitness test and athletic fitness test.

Morphology index (9 indexes): Body height (cm), body weight, chest circumference (cm), leg length (cm), achilles tendon length (cm), thigh circumference (cm), arms length (cm), arch foot (cm), somatotype.

Functional test (2 tests): Heart work (points), pulmonary volume (ml)

General fitness test (6 tests): Push-up 10s (pcs), muscular strength and endurance, maximal trunk extension (kg), 30m sprint.

Athletic fitness test (2 tests): Standing long jump(slj), long jump(lj).

Psychological test: temperament test (808 scale)

To apply the chosen tests for measurement and setting the selection criteria and the multiple linear regression equation to predict the performance of jumpers ages 13-14 Athletes were measured anthropometric and functional test in the morning and completed the general fitness test in the afternoon in the first day. The psychological test and athletic fitness test were done in the morning and afternoon in second day. All subjects were requested to warm up before taking part the functional test and fitness tests.

Statistics: Data was collected to calculate mean, standard of deviation. The step wise multiple regression analysis was applied to predict the performance of athletic meet at 0.05 level of confidence because the selected test satisfied the normality test.

RESULTS AND DISCUSSION

For the somatotype: The study was used the Carter and Heath (1990) methodology to identify the body structure. Percentage distribution of the somatotype of 25 long jumpers as follows: there were 10 athletes in the centre of the triangle represents 40%, 9 athletes tend to favor the ectomorphy 36%, and 6 athletes tend to favor the endomorphy 24%.

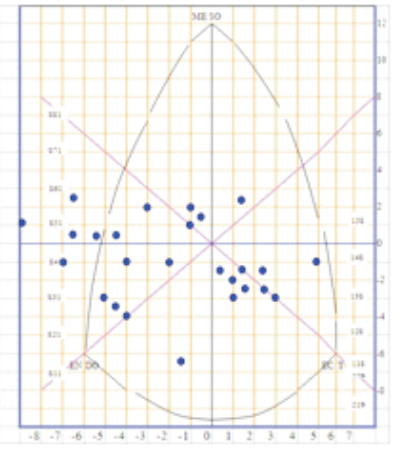

Figure 1: Diagram Somatotype morphological structure of 25 long jumpers ages 13-14 in Coimbatore district, tamilnadu

Table-1

Shows the variables of morphology, function, general fitness, athletic fitness psychology

Test	Mean	SD	Test	Mean	SD
Height (cm)	1.4976	0.07817	Heart work (point)	2.7933	0.17790
Weight (kg)	38.6536	5.26221	Pulmonary volume (L)	2.1320	0.24014
Chest Circumference (cm)	48.1600	6.12155	Push up (10s)	12.7768	0.56420
Leg length (cm)	68.8332	5.85160	Muscular strength and endurance (c)	18.7200	4.44897
Achiles tendon length (cm)	24.1464	3.47587	Trunk extension (kg)	31.3984	3.89662
Thigh girth (cm)	41.0296	6.11611	30m Sprint (s)	5.6556	0.33282
Arm length (cm)	49.2752	5.01325	Standing long jump (m)	1.5948	0.17746
arch foot (cm)	1.6356	0.14405	Long jump (m)	4.1820	0.56264

Calculation point of the test:

The study has built a scale recruitment male athletes (long jumpers) ages 13-14 according to C scale consists of 23 test items corresponding 5 of the selection process as morphology, function, general fitness, Athletic fitness and psychology. The expert opinion for the level of importance of the components was considered as a coefficient in the calculation of each component: morphology was 30%, function was 15%, general fitness was 20%, athletic fitness was 20%, psychology was 15%.

Equation C scale for each test is as follows:

Where,

: value of test mesuarment

x : mean

s x : standard of deviation

Table-2

Transcripts classified synthesis in male athletes recruited gifted athletes ages 13-14 in school levels.

S.No	Morph X1	Function X2	Gen.fit X3	Athl.fit X4	Psycho X5	Total Score	Classification	Competition
1.	34.63	2.59	13.00	4.57	6	60.79	Good	5
2.	35.01	2.59	12.70	4.98	10.5	65.78	Good	6
3.	32.83	2.20	13.86	4.54	4.5	57.93	Average	6
4.	31.48	2.28	14.6	5.02	10.5	63.88	Good	7
5.	32.32	2.075	15.40	4.25	3	57.045	Average	8
6.	34.77	2.45	16.10	4.67	3	60.99	Good	6
7.	35.23	2.56	14.45	4.51	9	65.75	Good	7
8.	33.42	2.56	14.4	3.95	10.5	64.83	Good	7
9.	33.3	2.57	14.26	3.61	6	59.74	Average	5
10	34.67	2.5	14.65	3.15	6	60.97	Good	6

1.	35.4	2.54	14.29	3.68	9	64.91	Good	7
2.	35.66	2.535	15.65	4.58	4.5	62.92	Good	7
3.	32.45	2.51	13.87	4.57	7.5	60.9	Good	8
4.	33.01	2.305	13.73	4.79	9	62.835	Good	8
5.	35.14	2.48	14.56	4.58	6	62.76	Good	7
6.	33.55	2.47	14.48	4.5	7.5	62.5	Good	6
7.	37.7	2.505	13.5	4	9	66.705	Good	7
8.	36.64	2.51	12.8	4.1	6	62.05	Good	8
9.	35.94	2.5	12.3	4.16	7.5	62.4	Good	7
10.	34.64	2.58	14.0	4.25	9	64.47	Good	8
11.	32.66	2.5	13.30	4.26	7.5	60.22	Good	7
12.	33.2	2.44	12.24	4.25	6	58.13	Average	5
13.	33.7	2.4	14.90	3.15	1.5	55.65	Average	6
14.	32.64	2.4	14.1	3.18	6	58.32	Average	5
15.	33.61	2.37	13.20	3.25	4.5	56.93	Average	4

Also to verify the fact, we conducted a draw for the 25 athletes and conducting athletic meet following the rules. Conventional score as follows: get 10 points for final, get 8 points for semifinal, get 6 points for quarter-finals, get 4 points for elimination round, get 2 points for pre-elimination round. From the results of this research, the finding is to set out the regression equation to relate multivariate competition achievements with other factors.

Regression Model

$Y = \alpha + \beta 1x1 + \beta 2x2 + \beta 3x3 + \beta 4x4 + \beta 5x5 + €I$

Where,

Y = Competition points (Dependent variables)

a = Constant,

β1, β2, β3, β4, β5 = Regression coefficient

x1 (morphology factor), x2 (function factor), x3 (general fitness factor), x4 (athletic fitness factor), x5 (psychological factor) = Independent variables

€I = Error Term

Table-3

The coefficient of regression multivariate between competition achievement and the independent variables

Regression Statistics						
Multiple R	0.893					
R Square	0.798					
Adjusted R Square	0.460					
Standard Error	0.413					
Observations	25					
		ANOVA				
Model	**Sum of Squares**	**df**	**Mean Square**	**F**		
Regression	6.060	15	.404	3.364		
Residual	1.538	9	.171			
	Coefficients	**Standard Error t Stat**	**t – Stat**	**P value**	**Lower 95%**	**Upper 95%**
Intercept	-6.2142067	7.2309720	-0.859387	0.4124314	-22.57180	10.143388
X Variable 1	0.1173706	0.2947774	0.338525	0.2531136	-0.549462	0.784203
X Variable 2	0.4797589	0.6597775	0.710707	0.4982023	-1.012761	1.972279
X Variable 3	0.0466520	0.2815590	0.623229	0.4554896	-0.590278	0.683582
X Variable 4	1.514229	0.702168	2.156504	0.063132	-0.10497	3.133432
X Variable 5	0.221216	0.094016	2.352972	0.046465	0.004416	0.438017

According to the regression equation shows that the variable Y (competition performance point) depends on the variable X consists of 5 components: morphology, function, general fitness, athletic fitness, psychology. If all or a portion of the variable X had been changed the variable Y would be changed. For example, if the total score of the test through the measurement of athletes A is rising that the result of regression equation will show greater and it can predict an athlete's performance will be better. Multiple R = 0.893 shows the relationship between the variables is relatively strong. R Square = 0.798 showed that 100% of the variation in performance of athlete, there is only 70.3% of the examined components affect performance of athletes, and 29.7% are due to other factors affecting the performance of athlete unexplored. The linear regression equation was established follow:

$$Y = -6.214 + 0.117\,X1 + 0.479\,X2 + 0.046\,X3 + 1.514\,X4 + 0.221\,X5$$

But looking at the value of p, there are only variable 1 (morphology) and variable 5 (psychology) statistically valid with $p < 0.05$, the other variables are not significantly. Indeed, the highest correlation between the performance of athletes and two components (morphology and psychology) is R=0.798

and they explain 62.5% of the change of competition achievements, three remaining components 5 explain only about 7.8% improvement in performance of jumping ability.

CONCLUSION

The research has identified 25 indicators in five components such as morphology, function, general fitness, athletic fitness, psychology and to apply them for selection male long jumpers ages 13-14 in Coimbatore district. It is also built the selection criteria and classification table of 23 indicators. The research is established the multiple linear regression equation to predict the performance of athletes ages 13-14 based on five components. There are two components such as morphology and psychology that they are an independent factor significantly predicted performance of long jumpers, other components such as function, general fitness and athletic fitness have little effect on the performance of long jumpers at the ages 13-14.

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