Prediction of Athletic Ability from Talent Identification Model on School Students

*Dr. D. Sultana and **J. Manohar Chendur Pandi,

Abstract - The track and field events offer opportunities for athletic success to a wide variety of personalities, body types and natural athletic talent than any other sport. Combined with its dual offering of individual and team competition, no other sport can provide a great extent as like athletes. There are opportunities to develop physically, emotionally and socially to discover hidden talents, learn about oneself and develop a new sense of competence and self-worth. The present paper highlights the importance of talent identification programme, which play a major role to determine the innate ability of the younger athletes. The results of the paper indicated, inherited factor that strength, speed, power and coordination were best predictor to determine the athletic ability.

Keywords - Talent Prediction, Athletic Ability, Sprint Jump, Throw

I. INTRODUCTION

EVERYONE has ability, but it isn’t distributed equally or predictably. There are opportunities to develop physically, emotionally and socially to discover hidden talents, learn about oneself and develop a new sense of competence and self-worth. This applies to coaches as well as athletes. Often ability is a gift of birth, but that doesn’t guarantee success. The challenge isn’t to have ability but to develop and use the ability that is given. Only through the persistent and consistent process of preparation can raw talent be transformed into greater capability. In track and field, this preparation is called training. Through proper training, athletes become faster, stronger, more skilled, knowledgeable, confident and mentally tough; however, although developing greater capability is important, it is still no guarantee of success. At best, only 50 percent of the participants can be winners in any sport competition. In a sport such as track and field, only one team among several and only one individual among many achieve victory.

Researchers have identified important characteristics for athletic performance and developed test to measure those characteristics. Testing athletes for potential is a method based on scientific facts rather than the trial and error method. Tabachnik [2] stated that the naked eye or a haphazard system of screening for talent will allow many potentially outstanding prospects to fall between the cracks.

Sharhey [4] reported that athletic performance evaluation can determine current fitness level of athletes, identify individual differences, assessed progress in training, spot potential in newcomers and guide athletes to the proper event or sport. Afanasiev [5] test can help coaches to determine the state of preparation and level of development of athletes’ physical qualities.

Talent identification at early ages is one of the major methods to improve the performances. Some of the leading western countries got benefit from the model. In India we are implementing the talent identification procedure since 1980. But in recent years the research development and implementation is very less. Athletic talent identification is approached from many different angles, depending on which countries are looking at and the sport for which athletes are being recognized and recruited.

Many children strive to attain excellence in sport. However, talent identification and development programmes have gained popularity in recent decades, there remains a lack of consensus in relation to how talent should be defined or identified and there is no uniformly accepted theoretical framework to guide current practice. 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 [6].

Today it is acknowledged that appropriate support and training are essential if talented individuals are to fulfill their potential. Partly for this reason, the early identification of talented athletes is an increasingly important consideration for researchers and practitioners alike. Once talented individuals have been detected, crucial but limited support resources can be optimally deployed to further refine and develop these talents. Without such support however, the needs of talented children may not be met and their gifts remain undeveloped. Consequently, effective talent identification system is an essential precursor to talent development as it will direct support to those individuals who have the greatest potential to achieve senior international success in sport.

Tamilnadu Government [7] has ordered to conduct a battery of test to assess the motor qualities in children studying in std. VI, VII and VIII in all schools since 2002. These qualities help to identify the child’s potential to play particular game/sport. The programme successfully conducted every year and talented children identified and underwent vacation camp specific to their qualities. The talent identification and the duration of the programme vary from country to country. This study is an attempt to make new perceptive of the talent search, combined with the morphological components named as somatotypes and field tests.

Foreman [8] outlined the area of track and field, natural speed, power, stride cadence, strength, movement time, coordination and low percent fat were considered important. Indiana University researchers recognized the potential of young athletes and predict their performance in selected track and field events. The basic tests are standing long jump, vertical jump, five bounds and standing 30 meters for male athletes.

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II. METHODOLOGY

156 boys were randomly selected from Tirunelveli, Tamilnadu (South India), who were identified as talents by world beater talent test with the age group of 12 to 14 years. The subjects were participated in the talent identification program voluntarily. Eleven motor fitness and performance variables in track and field event can be identified by using multiple regression analysis with the help of statistical package SPSS.16 for windows.

III. RESULTS AND DISCUSSION

The selected samples mean age, height and weight were 12.76 ± 0.54, 143.56 ± 6.63 and 33.40 ± 7.54 respectively. This result reveals that the age of the subjects shows the homogeneous characteristic, which ensures the reliable outcome for this study.

Prediction of Sprint & Jumping and Throwing Talents

The talent identification model of sprint & jumping events and throwing event contains the somatotypes and motor fitness scores as a raw format as well as standard scores. The performance variables 100 m dash, long jump and shot-put and independent variables namely, somatotypes components (endomorphy, mesomorphy, ectomorphy), isometric leg strength, 50m speed, standing broad jump, vertical jump, standing triple jump, five consecutive hops, push-ups, and shot backward throw, which were contained in the model.

The step wise multiple regression analysis was applied to predict the performance of track and field events at 0.05 level of confidence because the selected test satisfied the normality test.

Regression Model

\[ Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \varepsilon_i \]

Where,
\[ Y = 100 \text{ m Sprint, Long jump and shot-put (Dependent variables)} \]
\[ \alpha = \text{Constant,} \]
\[ \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \text{and } \beta_7 = \text{Regression coefficient} \]
\[ x_1, x_2, x_3, x_4, x_5, x_6, \text{and } x_7 = \text{Independent variables,} \]
\[ \varepsilon_i = \text{Error Term} \]

Sprinting Events

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>MULTIPLE CORRELATION COEFFICIENTS FOR THE PREDICTORS OF SPRINTING ABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
</tr>
<tr>
<td>a, Standing Broad Jump</td>
<td>0.689</td>
</tr>
<tr>
<td>a, Standing Broad Jump + 50 M Dash</td>
<td>0.753</td>
</tr>
<tr>
<td>a, Standing Broad Jump + 50 M Dash + Five Hops</td>
<td>0.763</td>
</tr>
</tbody>
</table>

Table I shows that the multiple correlation coefficient for predictors, such as standing broad jump, 50 m dash and five consecutive hops is 0.763, which produce highest multiple correlation (influence) with 100 m performance of selected school boys.

Regression Equation in obtained scores form \[ X_R = 19.052 \pm (2.809) \text{ S.B.J+ (0.576) 50 m Dash – (0.293)} \] Five Hops

Regression Equation in Standard scores form \[ X_T = 5.259 + (0.427) \text{ S.B.J+ (0.273) 50m Dash + (0.193) Five Hops} \]

Jumping Events

<table>
<thead>
<tr>
<th>TABLE II</th>
<th>MULTIPLE CORRELATION COEFFICIENTS FOR THE PREDICTORS OF JUMPING ABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
</tr>
<tr>
<td>a, Vertical Jump</td>
<td>0.695</td>
</tr>
<tr>
<td>a, Vertical Jump + Five Hops</td>
<td>0.764</td>
</tr>
<tr>
<td>a, Vertical Jump + Five Hops + Standing Broad Jump</td>
<td>0.780</td>
</tr>
<tr>
<td>a, Vertical Jump + Five Hops + Standing Broad Jump + 50 M Dash</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Table II shows that the multiple correlation coefficients for predictors, such as vertical jump, five hops, standing broad jump and 50 m dash is 0.788, which produce highest multiple correlations (influence) with long jump performance of selected school boys.

Fig.1 shows the majority of residuals at the center of the plot for each value of the predicted score. The plot of residuals fits the expected value well enough to support a conclusion that the residuals are normally distributed. The data are normally distributed, so residuals also normally distributed around the predicted variable scores.

Normal P-P Plot of Regression Standardized Residual
Fig. 2 shows the majority of residuals at the center of the plot for each value of the predicted score. The plot of residuals fits the expected value well enough to support a conclusion that the residuals are normally distributed around predicted variable scores.

Regression Equation in obtained scores form: \( X_R \)

\[
X_R = 1.586 + (0.024) V.J + (0.105) Five \text{ Hops} + (0.402) S.B.J - (0.090) 50 \text{ M Dash}
\]

Regression Equation in Standard scores form: \( X_T \)

\[
X_T = 3.597 + (0.281) V.J + (0.259) Five \text{ Hops} + (0.227) S.B.J - (0.159) 50 \text{ M Dash}
\]

### IV. DISCUSSION ON FINDINGS

The somatotypes and selected motor fitness components are not direct measures for any specific event or sport but the measures of variables are used as yardstick to suggest that a boy may have potential to excel within a particular sport [9]. In considering each variable, have reflecting both general and track & field performances.

The purpose of the paper was to develop the sprint & jump and throw event model and evaluate the model by identify the predictive factor, which influence the athletic ability.

The result of the paper suggested that the sprinter or jumper is to develop the most efficient technique possible while maximizing the performance of every muscle in the body. This can be accomplished by balancing speed, power, strength, jumping ability and coordination. To achieve perfection in the event, the athlete must generate high levels of force. An athlete’s overall strength will determine how much force he or she can summon during an execution. The Athletes must be able to maintain coordination at high speeds to continue running at top or near top speed.

Universally there appears to be a policy of only using simple field tests for talent identification, and no country appears to use sophisticated methods of talent identification for large number of athletes. From the literature it was seen that the tests used to fall in to distinct groups; sprinting, static jumps, multiple jumps and weight throwing. For the purpose of the general throwing talent identification of the novice athletes, the above tests were most commonly used. These tests were often used by coaches in track and field events and other sports to determine an athlete preparedness and anaerobic nature in track and field events and other sport. These tests are also used as crude indicators of talent for anaerobic events Schomlinsky [10]. In the United States, three commonly used field tests are the standing long jump, the vertical jump and the 50 yard dash (Foreman, 1989).
Swisher and Anna Meisinger [11] research finding supported the present findings. They applied the linear regression to predict the shot put and weight throw performances through performance of anthropometric, strength and power characteristics. Both shot put and weight throw performances was correlated strongly with measures of explosive strength and power ($r=0.48-0.78$). The best predictors of performance were static vertical jumps and 7.26 kg shot over head throw; better thrower possess greater explosive strength and power.

V. CONCLUSION
The outcome of this research making the new model to the current population to determine the athletic ability with simple field test. The field test is easy to understand and conduct without any laboratory settings. The process by where children are encouraged to participate in the sport and they are most likely to succeed based on results of testing. Talent identification would be to identify the individual with the suitable attributes for the respective events.

REFERENCES